

## **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.



Reserve  
aTD223  
.W37  
1994

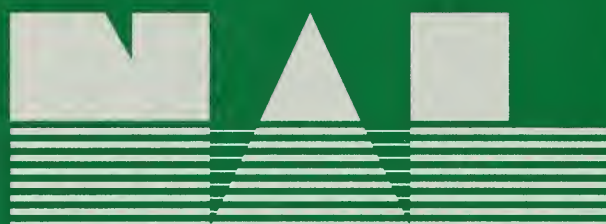
United States  
Department of Agriculture  
**Water Quality Program**



**Project  
Directory**

*May 1994*

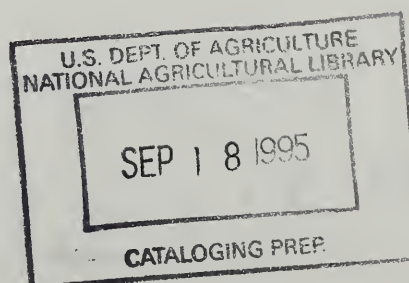
**United States  
Department of  
Agriculture**



**National Agricultural Library**

**- Table of Contents -**

Demonstration Projects . . . . .	3
Hydrologic Unit Area Projects . . . . .	8
Regional Technical Assistance . . . . .	22
Water Quality Incentive Projects . . . . .	26
Management System Evaluation Areas . . . . .	38
Agricultural Chemical Use Surveys . . . . .	39
Water Quality Research Projects . . . . .	40
Targeted Research Projects . . . . .	41
Special Research Grants, 1992 . . . . .	47
Special Research Grants, 1992 (Nitrogen Testing) . . . . .	52
Special Research Grants, 1993 . . . . .	54
National Competitive Grants, 1993 . . . . .	58
Small Business Innovation Research Grants, 1993 . . . . .	61



**- PREFACE -**

The USDA's Water Quality Program is a pollution prevention program. Its original emphasis was to prevent the contamination of groundwater by agricultural chemicals - plant nutrients from chemical fertilizers, or animal manures (or both), and from pesticides.

It soon became apparent that an exclusive focus on groundwater quality was not appropriate, since some surface water actually finds its way into aquifers to become groundwater, and some groundwater becomes base flow for streams.

This directory identifies and briefly describes the projects underway as a result of the USDA Water Quality Program.

If you would like more information about a specific project, please feel free to call the listed contact people, or the staff of the USDA Working Group on Water Quality; Larry Adams, Margaret-Ann Hamilton, or Fred Swader at (202) 205-5853.

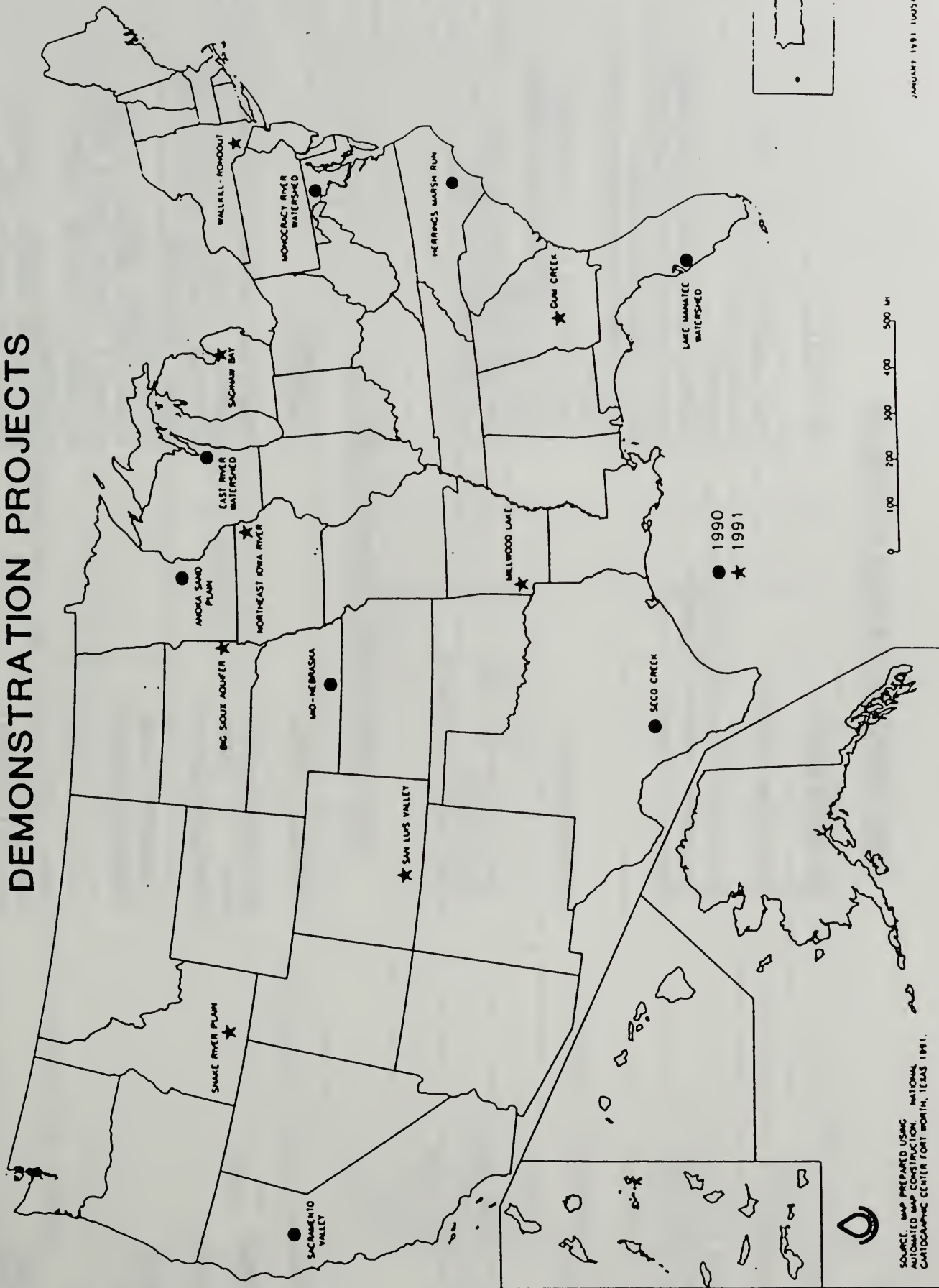


During 1990 and 1991, 16 projects representing different sets of agricultural, soil, and geologic conditions were selected to address agricultural nonpoint sources of pollution. The objective of these projects is to demonstrate the

effectiveness of selected conservation practices in treating specific nonpoint source pollution problems and to promote the use of these practices in other areas. Demonstration projects are using the best available technology and

management concepts to implement systems of conservation practices that combine efficient production with the producer's water quality goals.

## DEMONSTRATION PROJECTS



## 1990 DEMONSTRATION PROJECTS

<u>STATE</u>	<u>PROJECT NAME</u>	<u>COUNTY(S)</u>
CALIFORNIA	SACRAMENTO VALLEY	BUTTE, COLUSA, SUTTER, YUBA, TEHAMA, PLACER, YOLO
FLORIDA	LAKE MANATEE WATERSHED	MANATEE
MARYLAND	MONOCACY RIVER WATERSHED	CARROLL, FREDERICK, MONTGOMERY
MINNESOTA	ANOKA SAND PLAIN	ANOKA, BENTON, CHISAGO, HENNEPIN, ISANTI, MILLE, LACS, RAMSEY, SHERBURNE, STEARNS, WASHINGTON, WRIGHT
NEBRASKA	MID-NEBRASKA	ADAMS, BUTLER, CLAY, FILLMORE, HAMILTON, KEARNEY, POLK, SEWARD, YORK, WEBSTER
NORTH CAROLINA	HERRINGS MARSH RUN	DUPLIN (NORTHWESTERN PART)
TEXAS	SECO CREEK	BANDERA, MEDINA, UVALDE
WISCONSIN	EAST RIVER WATERSHED	BROWN

## 1991 DEMONSTRATION PROJECTS

<u>STATES</u>	<u>PROJECT NAME</u>	<u>COUNTY(S)</u>
ARKANSAS	MILLWOOD LAKE	HEMPSTEAD, HOWARD, LITTLE RIVER, POLK, SEVIER
COLORADO	SAN LUIS VALLEY	ALAMOSA, CONEJOS, COSTILLA, RIO GRANDE, SAGUACHE
GEORGIA	GUM CREEK	CRISP, DOOLY
IDAHO	SNAKE RIVER PLAIN	BLAINE, CASSIA, JEROME, LINCOLN, MINIDOKA, ONEIDA, POWER, TWIN FALLS
IOWA	NORTH EAST IOWA RIVER	ALLAMAKEE, CLAYTON, FAYETTE, WINNEBAGO
MICHIGAN	SAGINAW BAY	BAY, HURON, SAGINAW, TUSCOLA
NEW YORK	WALLKILL-RONDOUT	ORANGE, SULLIVAN, ULSTER
SOUTH DAKOTA	BIG SIOUX AQUIFER	BROOKINGS, MOODY, MINNEHAHA



# Water Resource Treatment Objectives for Demonstration Projects

State	Principal Water Resource Concern		Polluting Agents				
	Ground Water	Surface Water	Pesticides	Nutrients	Animal Waste	Mineral Salts & Elements	Sediment
Demonstration Projects 1990							
California		X	X				
Florida	X	X	X	X			
Maryland	X	X	X	X	X		X
Minnesota	X		X	X			
Nebraska	X		X	X			X
North Carolina	X	X	X	X	X		X
Texas	X	X	X	X	X		
Wisconsin	X	X	X	X	X		
Demonstration Projects 1991							
Arkansas	X	X		X	X		
Colorado	X		X	X			
Georgia	X	X	X	X			X
Idaho	X	X	X	X			X
Iowa	X	X	X	X			X
Michigan	X	X	X	X			X
New York	X	X	X	X	X		X
South Dakota	X		X	X	X		

## USDA Water Quality Demonstration Projects Initiated in FY 1990

State	County/Parish	Project Name	Focus	SCS Coordinator	ES Coordinator
California	Butte, Colusa, Sutter, Yuba, Tehama, Placer, Yolo	Sacramento Valley Demonstration Project	Pesticide residue levels in irrigation return flow.	Gary Bullard (916) 449-2855	Jim Hill (916) 752-3458
Florida	Manatee	Lake Manatee Watershed Demonstration Project	Nutrient and pesticide loadings.	Jerry Joiner (904) 377-7127	Brian McNeal (904) 392-1804
Maryland	Carroll, Frederick, Montgomery	Monocacy River Watershed Demonstration Project	Fertilizers and animal wastes.	Jeff Loser (301) 757-7145	Dick Weismiller (301) 405-1312
Minnesota	Anoka, Benton, Chisago, Hennepin, Isanti, Mille Lacs, Ramsey, Sherburne, Stearns, Washington, Wright	Anoka Sand Plain Demonstration Project	Nitrates and pesticides in groundwater.	Jon DeGroot (612) 290-3677	Fred Bergsrud (612) 625-9733
Nebraska	Adams, Butler, Clay, Fillmore, Hamilton, Kearney, Polk, Seward, York, Webster	Mid-Nebraska Water Quality Demonstration Project	Nitrogen, irrigation, and pest management.	Tom Hamer (402) 437-5313	Richard Ferguson (402) 762-4431
North Carolina	Duplin (northwestern part)	Herrings Marsh Run Demonstration Project.	Pesticide and nutrient loadings.	John Garrett (919) 790-2909	Frank Humenick (919) 737-2675
Texas	Bandera, Medina, Uvalde	Seco Creek Demonstration Project	Water yield, and pesticide and nitrogen leaching.	Gary Westmorland (817) 774-1255	Billy Hams (409) 845-2425
Wisconsin	Brown	East River Watershed Demonstration Project	Fertilizers and pesticides.	Jim Kapp (608) 264-5578	Gary Jackson (608) 262-1916

## USDA Water Quality Demonstration Projects Initiated FY 1991

State	County/Parish	Project Name	Focus	SCS Coordinator	ES Coordinator
Arkansas	Hempstead, Howard, Little River, Polk, Sevier	Millwood Lake	Animal manures	Albert E. Sullivan (501) 378-5964	Stan Chapman (501) 671-2168
Colorado	Alamosa, Conejos, Costilla, Rio Grande, Saguache	San Luis Valley	BMP's, groundwater, agricultural chemicals.	Steve Chick (303) 491 -6172	Lloyd Walker (303) 491-6172
Georgia	Crisp, Dooly	Gum Creek	Ground and surface water, nutrients, pesticides.	Hiram Boone (404) 546-2272	Bill Segars (404) 542-9072
Idaho	Blaine, Cassia, Jerome, Lincoln, Minidoka, Oneida, Power, Twin Falls	Snake River Plain	Water management deep well injection, water quality impacts.	Rod Alt (208) 334-9643	Robert Mahler (208) 885-7025
Iowa	Allamakee, Clayton, Fayette, Winneshiek	Northeast Iowa River	farm management systems, water quality.	Lyle Asell (515) 284-4523	Gerald Miller (515) 294-1923
Michigan	Bay, Huron, Saginaw, Tuscola	Saginaw Bay	Pesticides, nutrients and sediment.	William Hartman (517) 337-6904	Mark Hansen (517) 355-0117
New York	Orange, Sullivan, Ulster	Wallkill-Rondout	Water, soil, nutrient, and pest management.	Malcolm Henning (914) 343-1873	Keith Porter (607) 255-5941
South Dakota	Brookings, Moody, Men- nehaha	Big Sioux Aquifer	Nitrates, pesticides, groundwater.	LeRoy Holtzslaw (605) 353-1783	Alan Bender (605) 688-4910

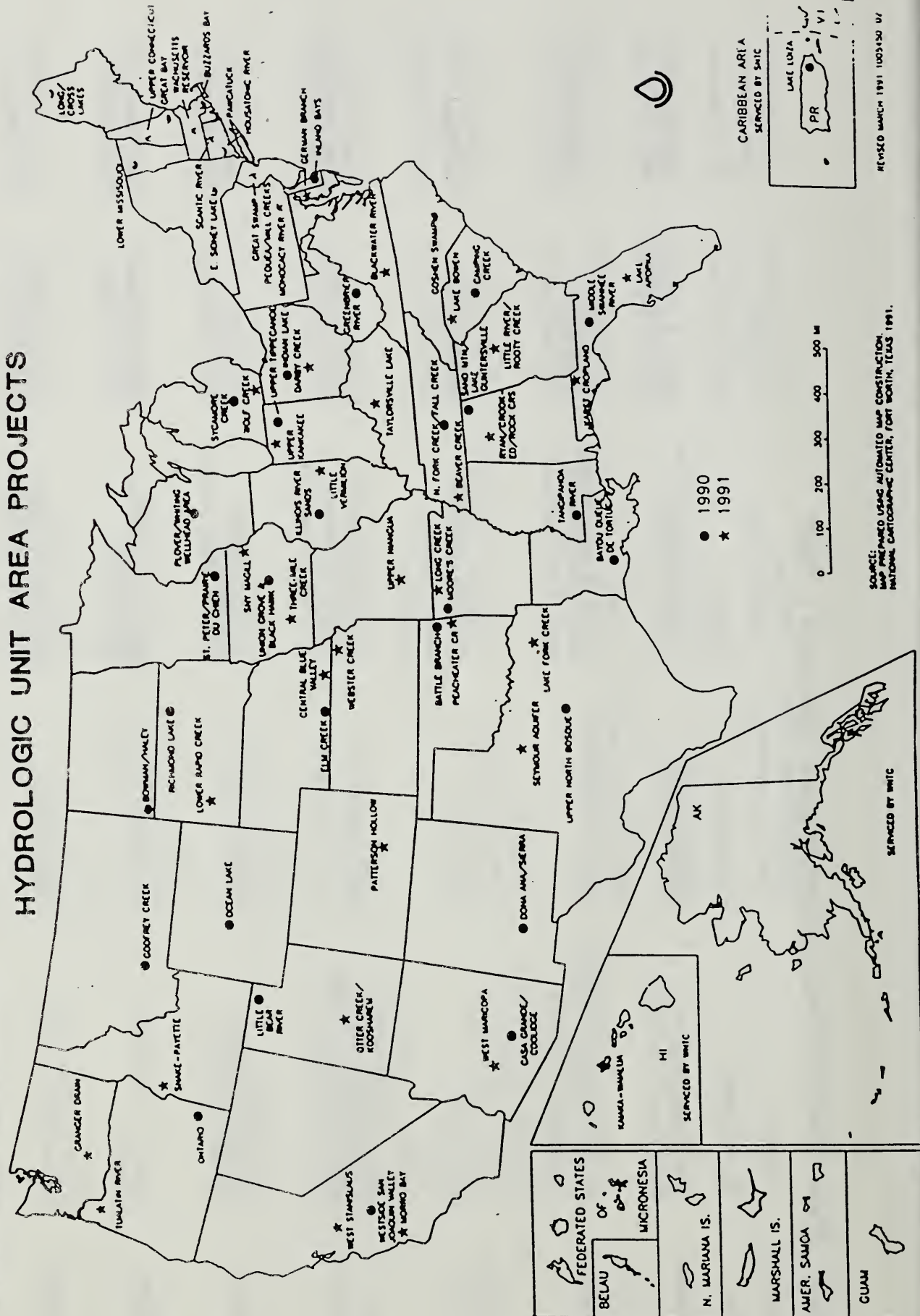


In selected agricultural watersheds or aquifer-recharge areas called "hydrologic unit areas," SCS, ES, ASOS, and cooperating agencies provide educational, technical, and financial assistance to help farmers and ranchers meet state water quality goals. The purpose of an HUA is to address an identified nonpoint source water quality problem.

During 1990 and 1991, 74 HUAs were selected on the basis of (1) significance of the agricultural sources of pollution; (2) relative predominance of such pollutants as pesticides, nutrients, animal waste, sediments, and salts; and (3) conformance with other water quality efforts. In each area, cost-sharing is provided to farmers to install conservation

practices for water quality improvement. Cost-share funds may come from several sources, including ASCS and state cost-share programs. HUA water quality plans are now being implemented. Each project will be evaluated to determine the effect that selected conservation practices have on the water quality problem.

## HYDROLOGIC UNIT AREA PROJECTS



# 1991 HYDROLOGIC UNIT AREAS

STATE	PROJECT NAME	COUNTY(S)	STATE	PROJECT NAME	COUNTY(S)
ALABAMA	RYAN/CROOKED/ROCK CREEKS	CULLMAN, WINSTON	ALABAMA	SANDMTN/LAKE GUNTERSVILLE	MARSHALL, DE KALB, JACKSON
ARIZONA	WEST MARICOPA	MARICOPA	ARIZONA	CASA GRANDE/COOLIDGE	PINAL
ARIZONA	LONG CREEK	CARROLL, BOONE	ARIZONA	MOORE'S CREEK	WASHINGTON
CALIFORNIA	MORRO BAY	SAN LUIS OBISPO	CALIFORNIA	WESTSIDE SAN JOAQUIN VALLEY	FRESNO, MERCED, KINGS
CALIFORNIA	WEST STANISLAUS	STANISLAUS	CALIFORNIA	HOUSATONIC RIVER	LITCHFIELD, FAIRFIELD, NEW HAVEN, HARTFORD (PLUS N.Y. & BERKSHIRE CO., MASS.)
COLORADO	PATTERSON HOLLOW	OTERO, PUEBLO	CONNECTICUT		SUSSEX
CONNECTICUT	SCANTIC RIVER	HARTFORD, TOLLAND	CONNECTICUT		LAFAYETTE, SUWANNEE
FLORIDA	KARST CROPLAND	JACKSON	DELAWARE	INLAND BAYS	MASON
FLORIDA	LAKE APOPKA	LAKE, ORANGE	FLORIDA	MIDDLE SWANNEE RIVER	
GEORGIA	LITTLE RIVER/ROOTY CREEK	JASPER, MORGAN, NEWTON, PUTNAM, WALTON	ILLINOIS	ILLINOIS RIVER SANDS	
			INDIANA	UPPER TIPPECANOE	KOSCIUSKO
HAWAII	KAAKA-WAIALUA	HONOLULU	IOWA	UNION GROVE AND BLACK HAWK	TAMA, MARSHALL
IDAHO	SNAKE-PAYETTE	ADAMS, CANYON, GEM, PAYETTE, WASHINGTON	LOUISIANA	BAYOU QUEUE DE TORTUE	ACADIA, VERMILION, LAFAYETTE
ILLINOIS	LITTLE VERMILION	CHAMPAIGN, EDGAR, VERMILION	MAINE	LONG/CROSS LAKES	AROOSTOOK
INDIANA	UPPER KANKAKEE	LA PORTE, MARSHALL, ST. JOSEPH	MASSACHUSETTS	BUZZARDS BAY	PLYMOUTH, BRISTOL, BARNSTABLE
IOWA	SNY MAGILL	CLAYTON	MICHIGAN	SYCAMORE CREEK	INGHAM
IOWA	THREE MILE CREEK	ADAIR UNION	MINNESOTA	ST. PETER/PRAIRIE DU CHIEN	OLMSTED
KANSAS	WEBSTER CREEK	BROWN, NEMAHA	MISSISSIPPI	TANGIPAHOA RIVER	PIKE, AMITE, LINCOLN
KENTUCKY	TAYLORSVILLE LAKE	ANDERSON, BOYLE, MERCER NELSON, SHELBY, SPENCER	MONTANA	GODFREY CREEK	GALLATIN
		QUEEN ANNE'S	NEBRASKA	ELM CREEK	WEBSTER
MARYLAND	GERMAN BRANCH	WORCESTER	NEW HAMPSHIRE	GREAT BAY	ROCKINGHAM, STRAFFORD
MASSACHUSETTS	WACHUSETTS RESERVOIR	LENAWEE	NEW MEXICO	DONA ANA/SIERRA	DONA ANA, SIERRA
MICHIGAN	WOLF CREEK	DALLAS, LACLEDE, WEBSTER	NEW YORK	EAST SIDNEY LAKE	DELAWARE
MISSOURI	UPPER NIANGUA	GAGE, JEFFERSON, SALINE	NORTH CAROLINA	GOSHEN SWAMP	DUPLIN
NEBRASKA	CENTRAL BLUE VALLEY	GRAFTON	NORTH DAKOTA	BOWMAN/HALEY	BOWMAN
NEW HAMPSHIRE	UPPER CONNECTICUT	MORRIS, SOMERSET	OHIO	INDIAN LAKE	LOGAN HARDIN
NEW JERSEY	GREAT SWAMP	CHAMPAIGN, FRANKLIN, LOGAN, MADISON, PICKAWAY, UNION	OKLAHOMA	BATTLE BRANCH	DELAWARE
OHIO	DARBY CREEK	ADAIR	OREGON	ONTARIO	MALHEUR
		WASHINGTON	PUERTO RICO	LAKE LOIZA	LAKE LOIZA in the RIO GRANDE DE LOIZA WATERSHED
OKLAHOMA	PEACHEATER CREEK	LANCASTER	RHODE ISLAND	PAWCATUCK	WASHINGTON
OREGON	TUALATIN RIVER	GREENVILLE, SPARTANBURG	SOUTH CAROLINA	CAMPING CREEK	LEXINGTON, NEWBERRY
PENNSYLVANIA	PEQUEAMILL CREEKS	PENNINGTON	SOUTH DAKOTA	RICHMOND LAKE	BROWN, EDMUNDS, MC PHERSON
SOUTH CAROLINA	LAKE BOWEN	FAYETTE, HAYWOOD, SHELBY, TIPTON	TENNESSEE	N FORK CREEK/FALL CREEK	BEDFORD
SOUTH OAKOTA	LOWER RAPID CREEK	HASKELL, KNOX	TEXAS	UPPER NORTH BOSQUE	ERATH, HAMILTON
TENNESSEE	BEAVER CREEK	HOPKINS, RAINS, WOOD	UTAH	LITTLE BEAR RIVER	CACHE
TEXAS	SEYMOUR AQUIFER	PIUTE, SEVIER	VERMONT	LOWER MISSISQUOI	FRANKLIN, LAMOILLE
TEXAS	LAKE FORK CREEK	FRANKLIN	WEST VIRGINIA	GREENBRIER RIVER	GREENBRIER
UTAH	OTTER CREEK/KOOSHAREM	YAKIMA	WISCONSIN	POVER/WHITING WELLHEAD AREA	PORTAGE
VIRGINIA	BLACKWATER RIVER		WYOMING	OCEAN LAKE	FREMONT
WASHINGTON	GRANGER DRAIN				



# Water Resource Treatment Objectives for Hydrologic Unit Areas

State	Principal Water Resource Concern		Polluting Agents					Sediment
	Ground Water	Surface Water	Pesticides	Nutrients	Animal Waste	Mineral Salts & Elements		
Nonpoint Source Hydrologic Unit Areas 1990								
Alabama	X	X	X		X			X
Arizona	X			X				
Arkansas	X	X		X	X			
California	X		X	X		X		
Connecticut	X	X	X	X	X			X
Delaware	X	X	X	X	X			X
Florida	X	X		X				
Illinois	X		X	X				
Indiana	X	X	X	X				X
Iowa	X	X	X	X				X
Louisiana		X			X			X
Maine		X		X				
Massachusetts		X	X	X	X			
Michigan	X	X	X					X
Minnesota	X		X	X	X			
Mississippi			X	X				X
Montana				X	X			X
Nebraska		X						X
New Hampshire	X	X	X	X	X			X
New Mexico	X	X	X		X	X		X
New York	X							X
North Carolina	X	X		X				X
North Dakota		X		X				X
Ohio		X						X
Oklahoma		X		X				
Oregon	X	X	X	X				
Puerto Rico		X	X					
Rhode Island	X	X	X	X				
South Carolina		X	X	X				

# Water Resource Treatment Objectives for Hydrologic Unit Areas—Continued

State	Principal Water Resource Concern		Polluting Agents				
	Ground Water	Surface Water	Pesticides	Nutrients	Animal Waste	Mineral Salts & Elements	Sediment
South Dakota		X		X			X
Tennessee	X	X	X	X	X		X
Texas		X	X	X	X		
Utah		X		X			X
Vermont	X	X	X	X			X
West Virginia	X	X	X	X			X
Wisconsin	X		X	X			
Wyoming		X	X	X			X
Nonpoint Source Hydrologic Unit Areas 1991							
AL - Ryan/Crooked/RockCreeks	X	X		X	X		X
AZ - West Mancoopa	X	X	X	X			
AR - Long Creek	X	X		X	X		
CA - Morro Bay	X	X	X	X			X
CA - West Stanislaus		X	X	X			X
CO - Patterson Hollow	X	X	X	X		X	X
CT - Scantic River	X	X	X	X			X
FL - Karst Cropland	X		X	X			X
FL - Lake Apopka		X	X	X	X		X
GA - Little River/Rooty Creek	X	X	X	X			X
HI - Kaiaka-Waialua	X	X	X	X			X
ID - Snake-Payette		X	X	X			X
IL - Little Vermilion		X	X	X			
IN - Upper Kankakee	X		X	X			
IA - Three Mile Creek	X	X	X	X	X		X
IA - Sny Magill Creek		X	X	X	X		X
KS - Webster Creek		X	X	X	X		X
KY - Taylorsville Lake	X	X		X			X

# Water Resource Treatment Objectives for Hydrologic Unit Areas—Continued

State	Principal Water Resource Concern		Polluting Agents				
	Ground Water	Surface Water	Pesticides	Nutrients	Animal Waste	Mineral Salts & Elements	Sediment
MD - German Branch	X	X	X	X			X
MA - Wachusett Reservoir	X	X		X	X		
MI - Wolf Creek	X	X	X	X			X
MO - Upper Nianqua	X	X	X	X	X		
NE - Central Blue Valley	X		X	X			
NH - Upper Connecticut		X	X	X	X		X
NJ - Great Swamp		X		X			X
OH - Darby Creek		X	X	X			X
OK - Peacheater Creek	X	X		X	X		
OR - Tualatin River		X	X	X	X		X
PA - Pequea/Mill Creeks	X	X	X	X	X		X
SC - Lake Bowen	X	X	X	X			X
SD - Lower Rapid Creek	X	X	X	X	X		X
TN - Beaver Creek	X	X	X	X			X
TX - Seymour Aquifer	X		X	X			
TX - Lake Fork Creek	X	X	X	X	X		
UT - Otter Creek/Koosharem		X		X	X		X
VA - Blackwater River		X	X	X			X
WA - Granger Drain	X	X	X	X	X		X



# Nonpoint Source Hydrologic Unit Areas Initiated FY 1990

State	County/Parish	Project Name	Focus	SCS Coordinator	ES Coordinator
Alabama	Marshall, De Kalb, Jackson	San Mountain/Lake Gunterville	Pesticides, sediment, and bacteria.	William Thompson, Jr. (205) 821-8070	James Hairston (205) 844-4985
Arizona	Pinal	Casa Grande/Cool-ridge	Nitrates - Irrigated cropland and animal feedlots.	Barton E. Ambrose (602) 640-2248	Roger Huber (602) 621-7207
Arkansas	Washington	Moore's Creek	Nitrogen and phosphorus loadings - from livestock and poultry.	Danny P. Goodwin (501) 378-5445	Stan Chapman (501) 373-2620
California	Fresno, Merced, Kings	Westside San Joaquin Valley	Pesticide and nutrient residues.	Gary L. Bullard (916) 449-2848	Ken Tanji (916) 752-0683
Connecticut	Litchfield, Fairfield, New Haven, Hartford (plus Dutchess and Columbia Counties in N.Y. and Berkshire County in Mass.)	Housatonic River	Nutrients, pesticides, fertilizers, and sediment.	Joseph A. Neafsey (203) 487-4017	Roy Jeffery (203) 887-1608
Delaware	Sussex	Inland Bays	Sediment and nutrients.	Lester Stillson (302) 678-4162	Dave Woodward (302) 451-2505
Florida	Lafayette, Suwannee	Middle Suwannee River	Nutrients - Suwannee River and Floridan Aquifer.	Jerry R. Joiner (904) 377-7127	Arthur G. Hornsby (904) 392-1951
Illinois	Mason	Illinois River Sands	Agriculture nutrient and pesticide loadings.	Gary Parker (217) 398-5271	Donald Kuhlman (217) 333-9649
Indiana	Kosciusko	Upper Tippecanoe	Nitrates, phosphates, pesticides, and sediment.	Charles Gossett (317) 290-3219	David Petritz (317) 494-8494

# Nonpoint Source Hydrologic Unit Areas Initiated FY 1990 - Continued

State	County/Parish	Project Name	Focus	SCS Coordinator	ES Coordinator
Iowa	Tama, Marshall	Union Grove and Black Hawk	Nutrients, pesticides and sediment.	Lyle Asell (515) 284-4260	Jerry Miller (515) 294-1923
Louisiana	Acadia, Vermilion, Lafayette	Bayou Queue De Tortue	Sediment-laden discharge from rice fields.	Kent Milton (318) 473-7808	Bill Branch (504) 388-2229
Maine	Aroostook	Long/Cross Lakes	Nutrients, pesticides, and sediments.	Robert Wengrynek (207) 581-3436	Rick Kersbergen (207) 581-3312
Massachusetts	Plymouth, Bristol, Barnstable	Buzzard's Bay	Agricultural nutrients and pesticides.	Fred Suffian (413) 256-0441	Bob Schrader (413) 454-2665
Michigan	Ingham	Sycamore Creek	Agricultural pesticides and sediment.	William J. Hartman (517) 337-6904	Frank Brewer (517) 355-0117
Minnesota	Olmsted	St. Peter/Prairie Du Chien	Agricultural nutrients and pesticides.	Jon DeGroot (612) 290-3677	Fred Bergsrud (612) 625-9733
Mississippi	Pike, Amite, Lincoln	Tangipahoa River	Pesticides, fertilizers, animal wastes, and sediment.	Robert N. Jones (601) 965-4330	John Wilson (601) 325-8737
Montana	Gallatin	Godfrey Creek	Sediment, animal wastes, and nitrates.	Scott Hoag, Jr. (406) 587-6816	Richard E. Phillips (406) 994-3681
Nebraska	Webster	Elm Creek	Soil erosion and sediments.	Tom Hamer (402) 437-5313	James Bushnell (402) 472-2966
New Hampshire	Rockingham, Strafford	Great Bay	Nutrients, pesticides, sediment, and animal wastes.	John D. Minnick (603) 868-7581	Frank Mitchell (603) 862-1067
New Mexico	Dona Ana, Sierra	Dona Ana/Sierra	Agricultural chemicals, nutrients, and animal wastes.	Ernest Gonzales (505) 766-2173	Elston Grubaugh (505) 646-2021



# Nonpoint Source Hydrologic Unit Areas Initiated FY 1990 - Continued

State	County/Parish	Project Name	Focus	SCS Coordinator	ES Coordinator
New York	Delaware	East Sidney Lake	Nutrients, pesticides, and sediment.	Joseph R. DelVecchio (315) 423-5544	David W. Gross (607) 255-2825
North Carolina	Duplin	Goshen Swamp	Nutrients, pesticides, sediment and animal wastes.	John Garrett (919) 790-2909	Frank Humenik (919) 737-2675
North Dakota	Bowman	Bowman/Haley	Nutrients and sediment.	Herb T. Mlttelstedt (701) 250-4421	Darnell Lundstrom (701) 237-7239
Ohio	Logan, Hardin	Indian Lake	Sedimentation of Indian Lake.	Robert L. Burris (614) 469-6932	Don Pritchard (614) 292-4077
Oklahoma	Delaware	Battle Branch	Nutrients entering the river system.	Donald R. Vandersypen (405) 624-4404	James H. Steigler (405) 744-6421
Oregon	Malheur	Ontario	Sediment, nutrients and pesticides.	Kenneth D. Kaul (503) 326-2751	James A. Vomocil (503) 737-2441
Puerto Rico	Rio Grande de Loiza watershed	Lake Loiza	Nutrients, pesticides, sediment, and animal wastes.	Manuel Davila-Sanchez (809) 878-5120	Rafael Davila-Lopez (809) 765-8000
Rhode Island	Washington	Pawcatuck	Nutrients, pesticides, sediment and animal wastes.	Kristine A. Stuart (401) 828-1300	William R. Wright (401) 792-2495
South Carolina	Lexington, Newberry	Camping Creek	Nutrients, pesticides, sediment, and bacteria.	Brian Schmidt (803) 253-3977	Mack Horton (803) 656-3113

## Nonpoint Source Hydrologic Unit Areas Initiated FY 1990 - Continued

State	County/Parish	Project Name	Focus	SCS Coordinator	ES Coordinator
South Dakota	Brown, Edmunds, McPherson	Richmond Lake	Nutrients, sediment, and bacteria.	Leroy Holtsclaw (605) 353-1783	Chuck Ullrey (605) 688-5669
Tennessee	Bedford	N. Fork Creek and Fall Creek	Nutrients, pesticides, sediment, and animal waste.	Tim Powers (615) 736-5471	George Smith (615) 974-7306
Texas	Erath, Hamilton	Upper North Bosque River	Nutrients, pesticides, and animal wastes.	Gary Westmoreland (817) 774-1360	Bill Harris (409) 845-2425
Utah	Cache	Little Bear River	Nutrient and sediment loadings.	R. Deane Harrison (801) 524-5054	Richard C. Peralta (801) 750-2786
Vermont	Franklin, Lamoille	Lower Missisquoi	Surface nutrients, pesticides, animal wastes.	Richard J. Croft (802) 951-6795	Don McFeeters (802) 656-2990
West Virginia	Greenbrier		Nutrients, pesticides, and sediments.	Paul Dunn (304) 291-4151	Edmond B. Collins (304) 293-6131

# Nonpoint Source Hydrologic Unit Areas Initiated Fiscal Year 1991

State	County/Parish	Project Name	Focus	SCS Coordinator	ES Coordinator
Alabama	Cullman, Winston	Ryan/Crooked/Rock Creeks	Animal wastes, nitrates, bacteria, and sediments.	Ernest V. Todd (205)821-8070	Anne Thompson (205)844-5700
Arizona	Maricopa	West Maricopa	Biofilters for salt and agricultural chemicals, surface waters.	Mike Sullivan (602)640-2829	Jack Watson (602)568-2273
Arkansas	Carroll, Boone	Long Creek	Bacteria and phosphorus levels in streams and lakes.	Gene Sullivan (501)378-5445	Ted Jones (501)671-2000
California	San Luis Obispo	Morro Bay	Sediments to the Morro Bay estuary.	Gary Bullard (916)449-2855	Kenneth Tanji (916)752-0683
California	Stanislaus	West Stanislaus	Soil erosion and tailwater runoff from surface irrigated agricultural fields.	Gary Bullard (916)449-2855	Kenneth Tanji (916)752-0683
Colorado	Otero, Pueblo	Patterson Hollow	Salts, nutrients and pesticides.	Stephen Chick (303)236-2886	Jim C. Loftis (303)491-5252
Connecticut	Hartford, Tolland	Scantic River	Sediments, organic waste and nutrients.	Joseph Neafsey (203)487-4017	Roy Jeffrey (203)887-1608
Florida	Jackson	Karst Cropland	Pesticides, nutrients, agricultural runoff.	Jerry Joiner (904)377-7127	Roy Carriker (904)392-2394
Florida	Lake, Orange	Lake Apopka	Nutrient loading to surface waters.	Jerry Joiner (904)377-7127	Roy Carriker (904)392-2394



# Nonpoint Source Hydrologic Unit Areas Initiated Fiscal Year 1991

State	County/Parish	Project Name	Focus	SCS Coordinator	ES Coordinator
Georgia	Jasper, Morgan, Putnam, Walton Newton	Little River/Rooty Creek	Chemicals, nutrients, and bacteria.	Hiram Boone (404)546-2272	Bill Segars (404)542-9072
Hawaii	Honolulu	Kaiaka-Waialua	Chemical pollution of the Waialua Aquifer, soil erosion.	Warren M. Lee (808)541-2601	Roy Nishimoto (808)948-8157
Idaho	Adams, Canyon,	Snake-Payette Payette, Washington Gem	Nutrient and pest management.	Rod Alt (208)334-9643	Robert Mahler (208)885-7025
Illinois	Champaign, Edgar Vermillion	Little Vermillion	Sediment delivery, suspended solids, and nitrate concentrations.	Wiley Scott (217)398-5301	Rick Farnsworth (217)333-4565
Indiana	La Porte, Marshall, St. Joseph	Upper Kankakee	Agricultural nitrates, phosphorus, pesticides, and sediment.	William Weber (317)290-3202	David Petritz (317)494-8494
Iowa	Clayton	Sny Magill	Sediment delivery, animal waste runoff, and pesticide contamination.	Lyle W. Asell (515)284-4260	Gerald A. Miller (515)294-1923
Iowa	Adair, Union	Three Mile Creek	Sediment delivery, animal waste and nutrient and nutrient runoff, and pesticides.	Lyle W. Asell (515)284-4260	Gerald A. Miller (515)294-1923

# Nonpoint Source Hydrologic Unit Areas Initiated Fiscal Year 1991

State	County/Parish	Project Name	Focus	SCS Coordinator	ES Coordinator
Kansas	Brown, Nemaha	Webster Creek	Suspended solids, phosphorus, fecal bacteria, and nitrates.	Larry Miles (913)823-4578	John Hickman (913)532-5776
Kentucky	Anderson, Boyle, Mercer, Nelson, Shelby, Spencer	Taylorsville Lake	Sediment and nutrient loads and pesticide runoff.	Kilby Lanier (606)233-2747	Curtis Absher (606)257-1846
Maryland	Queen Annes	German Branch	Nutrients and pesticides, riparian zone vegetation.	Melissa Westerlund (301)757-0861	Richard Weismiller (301)454-4787
Massachusetts	Worcester	Wachusett Reservoir	Nutrients, bacteria, and bacteria, and sediment.	Carl Gustafson (413)256-0441	Robert Schrader (413)545-2665
Michigan	Lenawee	Wolf Creek	Chemicals, phosphorus, and phosphorus, and sediment.	William Hartman (517)337-6904	Mark Hansen (517)355-0117
Missouri	Dallas, Laclede, Webster	Upper Niangua	Animal wastes, and abandoned farm wells.	Tulley Nelson (314)875-5213	Jerry Carpenter (314)882-2731
Nebraska	Gage, Jefferson, Saline	Central Blue Valley	Pesticides, nitrogen and irrigation efficiency.	Tom H. Hamer (402) 437-5313	Dale Vanderhelm (402)472-3305
New Hampshire	Grafton	Upper Connecticut	Sediment, nutrients, animal waste, and pesticides.	Carter Christenson (603)868-7581	Frank Mitchell (603)862-1067
New Jersey	Morris, Somerset	Great Swamp	Sediment and nutrients entering surface waters.	Thomas Drewes (201)246-1662	Ted Shelton (201)932-9631



## Nonpoint Source Hydrologic Unit Areas Initiated Fiscal Year 1991

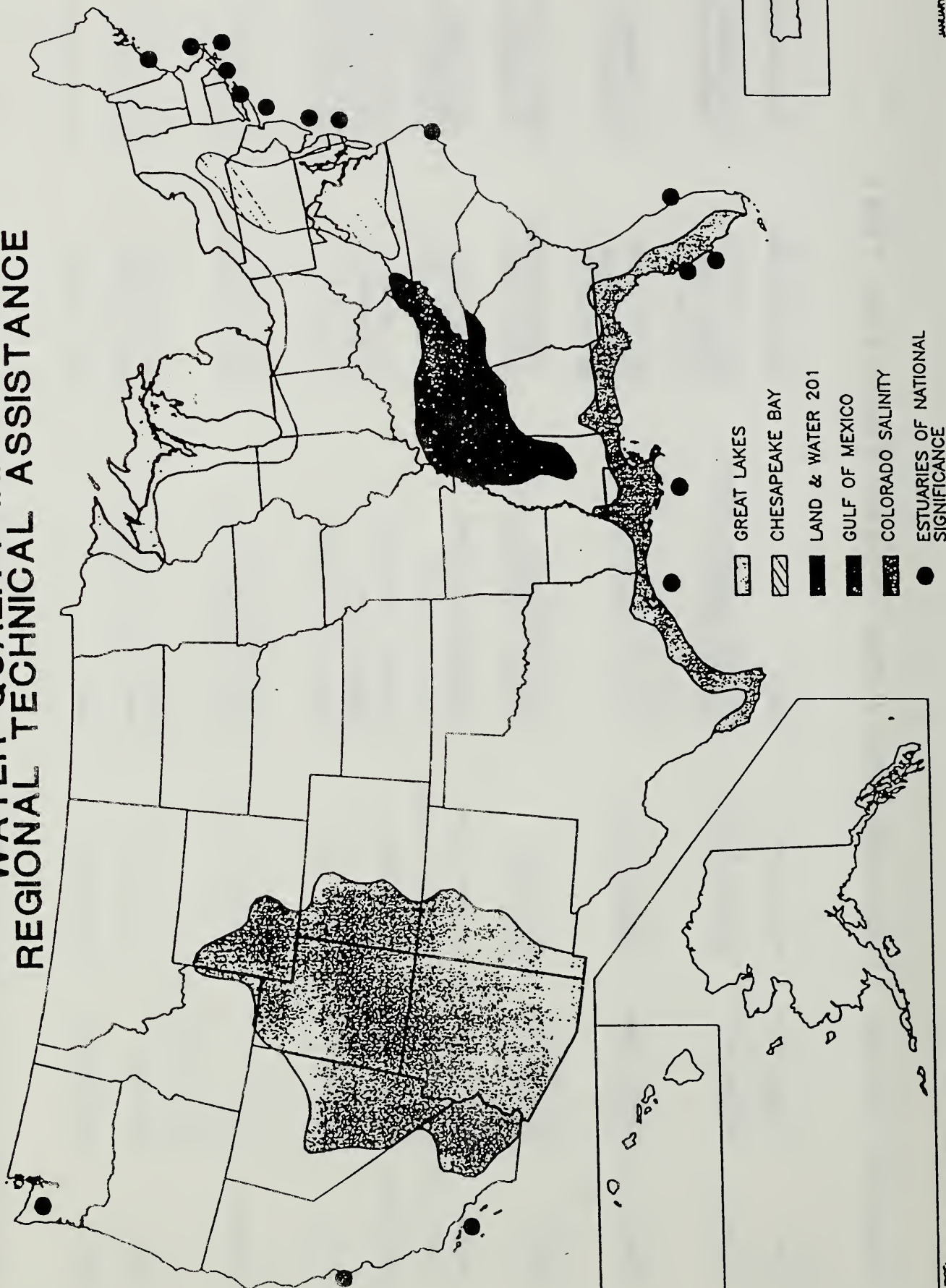
State	County/Parish	Project Name	Focus	SCS Coordinator	ES Coordinator
Ohio	Champaign, Franklin, Logan Madison, Pickaway Union	Darby Creek	Sedimentation in Darby Creek.	Robert L. Burris (614)469-6932	Don Pritchard (614)292-4077
Oklahoma	Adair	Peacheater Creek	Nitrate, phosphorus, and animal waste loads.	Don Vandersypen (405)624-4404	Jim Stiegler (405)744-6421
Oregon	Washington	Tualatin River	Sediment and nutrient loads.	Ken Kaul (503)326-2751	JohnBuckhouse (503)737-3341
Pennsylvania	Lancaster	Pequea/Mill Creeks	Nutrient, pesticide, and animal wastes.	Robert Heidecker (717)782-4403	Les Lanyon (814)863-1614
South Carolina	Greenville, Spartanburg	Lake Bowen	Sediment, pesticides, and nutrient loads.	Burton Wells (803)765-5683	Paul M. Horton (803)656-5056
South Dakota	Pennington	Lower Rapid Creek	Sediment, animal wastes, nutrient, and pesticide loads.	Leroy Holtsclaw (605)353-1783	Alan Bender (605)688-4910
Tennessee	Fayette, Haywood, Shelby, Tipton	Beaver Creek	Sediment, pesticides, and nutrients.	Louis Godbey (615)736-5473 (817)774-1255	George Smith (615)974-7306 (817)774-1255

# Nonpoint Source Hydrologic Unit Areas Initiated Fiscal Year 1991

State	County/Parish	Project Name	Focus	SCS Coordinator	ES Coordinator
Texas	Haskell, Knox	Seymour Aquifer	Pesticides, nutrients, animal wastes and salts.	Gary Westmoreland (817)774-1255	Bill L. Harris (409)845-2425
Texas	Hopkins, Rains, Wood	Lake Four Creek	Animal wastes and nutrients.	Gary Westmoreland (817)774-1255	Bill L. Harris (409)845-2425
Utah	Piute, Sevier	Otter Creek/ Koosharem	Sediment, fertilizers pesticides, and bacteria.	R. Deane Harrison (801)524-5054	David Rogers (801)750-1255
Virginia	Franklin	Blackwater River	Sediment and Nutrients.	George Norris (804)771-2457	Jim Johnson (703)231-6705
Washington	Yakima	Granger Drain	Sediment, nutrient and biological loads.	David P. Myra (509)865-4012	Robert Stevens (509)786-2226

# FIGURE 3 WATER QUALITY INITIATIVE REGIONAL TECHNICAL ASSISTANCE

U.S. DEPARTMENT OF AGRICULTURE



- GREAT LAKES
- CHESAPEAKE BAY
- LAND & WATER 201
- GULF OF MEXICO
- COLORADO SALINITY
- ESTUARIES OF NATIONAL SIGNIFICANCE

SOURCE: MAP PREPARED USING AUTOMATED MAP CONSTRUCTION. NATIONAL CARTOGRAPHIC CENTER, FORT WORTH, TEXAS 1991.

JANUARY 1991 1006883



## ESTUARIES OF NATIONAL SIGNIFICANCE

1.	PUGET SOUND	WA
2.	SAN FRANCISCO BAY	CA
3.	SANTA MONICA BAY	CA
4.	GALVESTON BAY	TX
5.	BARATARIA--TERREBONNE ESTUARY	LA
6.	TAMPA BAY	FL
7.	SARASOTA BAY	FL
8.	INDIAN RIVER LAGOON	FL
9.	ALBEMARLE--PAMLICO SOUND	NC
10.	DELAWARE INLAND BAYS	DE
11.	DELAWARE BAY	DE--NJ
12.	NEW YORK--NEW JERSEY HARBORS	NY--NJ
13.	LONG ISLAND SOUND	NY--CT
14.	NARRAGANSETT BAY	RI
15.	BUZZARDS BAY	MA
16.	MASSACHUSETTS BAY	MA
17.	CASCO BAY	ME

## Regional Multi-State Water Quality Projects National Estuary Program

The National Estuary Program promotes comprehensive planning and management in nationally significant estuaries threatened by pollution, development, or overuse. The goals of the program are protection and improvement of water quality and enhancement of living resources. The National Estuary Program (NEP) was established under Section 320 of the Clean Water Act of 1987.

---

### Soil Conservation Service National Estuary Program Contacts

#### **Sarasota Bay, Tampa Bay, Indian River Lagoons, Florida**

Ken Murray  
Soil Conservation Service  
401 SE 1st Avenue, Room 248  
Gainesville, FL 32601  
Tel: 904-338-0235

#### **Delaware Inland Bays, Delaware**

Paul Petrichenko  
Soil Conservation Service  
Treadway Towers  
9 East Loockerman Street, Suite 207  
Dover, Delaware 19901-7377  
Telephone: (302) 678-4180

#### **Long Island Sound, Connecticut, New York**

Joe Neasey  
Soil Conservation Service  
16 Professional Park Road  
Storrs, Connecticut 06268-1299  
Telephone: (203) 487-4017

#### **San Francisco Bay, Santa Monica Bay, California**

Luana Kieger  
Soil Conservation Service  
2121-C 2nd Street  
Davis, California 95616  
Telephone: (916) 758-2852

#### **Massachusetts Bay, Buzzard's Bay, Massachusetts**

Carl Gustafson  
Soil Conservation Service  
451 West Street  
Amherst, Massachusetts 01002  
Telephone: (413) 256-0441/(FTS) 836-9056

#### **Narragansett Bay, Rhode Island**

Kristine A. Stuart  
Soil Conservation Service  
46 Quaker Lane  
Warwick, Rhode Island 02886  
Telephone: (401) 828-1300

#### **Barrataria-Terrebonne, Louisiana**

Jack Cutshall  
Soil Conservation Service  
3737 Government Street  
Alexandria, Louisiana 71302  
Telephone: (318) 473-7815/(FTS) 497-7518

#### **Delaware Bay, New Jersey, Pennsylvania, Delaware**

Thomas A. Drewes  
Soil Conservation Service  
1370 Hamilton Street  
Somerset, New Jersey 08873  
Telephone: (908) 246-1662

#### **Puget Sound, Washington**

Terry Nelson  
Puget Sound River Basin Study Team  
Baran Hall PV-11  
Olympia, Washington 98504-8711  
Telephone: (206) 459-6628/6235

#### **Galveston Bay, Texas**

Eddie Seidensticker  
Galveston Bay Foundation  
3027 Marina Bay Drive  
Suite 105  
League City, Texas 77573  
Telephone: (713) 334-3665

#### **Albemarle - Pamlico, North Carolina**

Cecil Settle  
Soil Conservation Service  
4405 Bland Road, Suite 205  
Raleigh, North Carolina  
Telephone: (919) 790-2888/(FTS) 672-2909

#### **Casco Bay, Maine**

Wayne Munroe  
Soil Conservation Service  
1A Karen Drive  
Westbrook, Maine 04092  
Telephone: (207) 871-9246

#### **N.J./N.Y. Harbor, New Jersey, New York**

Thomas A. Drewes  
Soil Conservation Service  
1370 Hamilton Street  
Somerset, New Jersey 08873  
Telephone: (908) 246-1662



# Regional Technical Assistance Projects

## **Great Lakes Program Jerome (Romy) Myszk, Conservation Liaison Great Lakes National Program Office**

The Great Lakes Water Quality Agreement (GLWQA) obligates both the United States and Canada to take vigorous measures to restore and maintain the chemical physical and biological integrity of the water of the Great Lakes Basin Ecosystem. Section 118 of the Clean Water Act, as amended in 1978, requires that the Chief of the Soil Conservation Service (SCS) submit an annual report to the Administrator of the U.S. Environmental Protection Agency (EPA) with respect to the activities of the SCS relating to the Great Lakes.

SCS is providing accelerated technical assistance with emphasis on nonpoint source pollution control especially as it relates to erosion control and phosphorus management. Wetland identification and mapping, tillage surveys and other environmental assessments were accelerated within the Basin during 1989. SCS is represented and currently serves in an advisory capacity on several Great Lakes Program committees including those overseeing the development and implementation of Remedial Action Plans, Phosphorus Reduction Plans, and Lakewide Management Plans.

## **Chesapeake Bay Program Mike Permenter Chesapeake Bay Program Coordinator Chesapeake Bay Liaison Office 410 Severn Avenue Annapolis, Maryland**

The Soil Conservation Service (SCS) is providing accelerated technical assistance in the Chesapeake Bay drainage area for the restoration and protection of the Bay's water quality and living resources. SCS work is being carried out as set forth in the Memorandum of Understanding (MOU) signed November 21, 1984,

between the Environmental Protection Agency (EPA) and SCS and is in cooperation with the U.S. Fish and Wildlife Service, U.S. Geological Survey, National Oceanic and Atmospheric Administration, and the Department of Defense. SCS is working closely with other USDA agencies such as the Agricultural Stabilization and Conservation Service, Extension Service, and Forest Service to provide a complete cross section of USDA support for Bay activities. Memorandums of Understanding have been developed between SCS and Extension Service, Agricultural Research Service, Environmental Protection Agency, and U.S. Geological Survey to strengthen interagency cooperation in the Bay program.

## **Colorado River Salinity Control Program (CRSCP) David Mason, Program Manager Soil Conservation Service Washington, D.C.**

The objectives of the Colorado River Salinity Control program are to reduce salt loadings in order to enhance and protect the quality of water available in the Colorado River for use in the United States and Mexico (Public Law 93-320 Colorado River Basin Salinity Control Act). Key provisions of the program are the non-Federal cost-share reimbursement from the hydroelectric power revenues of the Upper and Lower Colorado River Basin development funds and authority to cost-share with irrigation districts and canal companies. Major SCS activities include development of project plans, preparation of onfarm conservation plans, and provision of technical assistance to help landusers apply conservation practices and to help ensure that adequate irrigation water management is practiced.

## **Land and Water 201 Jack Kuhn, Program Manager Muscle Shoals, Alabama**

In 1984, a memorandum of agreement was signed creating Land and Water 201 to serve as a national demonstration of multiagency cooperation in reducing soil erosion and improving water quality while maintaining farm income. Participating organizations are the soil and water conservation and water quality agencies of the seven Tennessee Valley states (Alabama, Georgia, Kentucky, Mississippi, North Carolina, Tennessee and Virginia), the Food and Agriculture Council in each state representing USDA agencies, U.S. Environmental Protection Agency, and the Tennessee Valley Authority.

The primary function of the Land and Water 201 program is to provide remedial measures to 201 counties in the project area to reduce sheet and till erosion in an area that has the highest estimated cropland erosion in the nation.

## **Gulf of Mexico Program Vacant, Program Manager Soil Conservation Service Stennis Space Center, Mississippi**

The Gulf of Mexico Program was established to develop and implement a comprehensive strategy for managing and protecting the resources of the Gulf. Issues of particular importance to the Gulf of Mexico have been identified for detailed study since they are of regional significance, cross jurisdictional boundaries, constitute significant threats to the resources of the Gulf, and are amenable to solution.

Nutrient enrichment was identified as an important issue because of its impact on the overall environmental quality of the Gulf area, especially the capability of the marine ecosystem to continue to support diverse and balanced populations of fish, shellfish, and other organisms which effect the economic, aesthetic, and recreational value of the Gulf.

## Water Quality Incentive Projects

The Food, Agriculture, Conservation, and Trade Act of 1990 (FACT Act) authorized a Water Quality Incentive Program. The goal of the program was to provide incentive payments to achieve the source reduction of agricultural pollutants to enhance and protect surface and ground water quality.

Appropriations language since 1992 has provided funds under the Agricultural Conservation Program (ACP) to be used for Water Quality Incentive Project (WQIP) payments and practices in a manner as permitted under the FACT Act.

WQIP funds have been allocated from ACP funds as follows:

1992 - \$6,750,000 distributed for use in 48 states and Puerto Rico for use in HUA's, Demo's, and WQSP areas.

1993 - \$15,000,000 issued to 42 states for use in 106 projects.

1994 - \$15,000,000 issued to 30 states for use in 71 projects.

The Fiscal Year (FY)1992 allocations remain available until the end of the obligation period for the HUA, DP, or WQSP in which the FY 1992 WQIP was approved. The latest obligation period for FY 1992 WQIP's is December 30, 1995. The obligation period for FY 1993 projects end December 31, 1994. FY 1994 allocations are available until December 31, 1995.

Priority was given to those applications from areas that had been designated by the Environmental Protection Agency and the State water quality agency as areas where nonpoint source pollution contributes to the degradation of or threatens the quality of surface or ground water. Credit was given to project proposals that:

- were within National Conservation Priority Areas, such as, Chesapeake Bay, Long Island Sound, Great Lakes, and other areas of special environmental sensitivity
- reduce or prevent pollution of sources of drinking water
- improve endangered or threatened species habitat
- benefit recreation and provide significant societal benefits.

The maximum project size for FY 1993 WQIP was 90,000; in 1994 it was 64,000 acres. Smaller projects were given a higher priority than larger projects that do not sufficiently address a specific water quality problem. Projects for watersheds comprised of predominately (greater than 50 percent) rangeland, forestland, or both, were allowed to submit an application for a watershed up to a maximum of 100,000 acres in 1993, and 128,000 acres in 1994.



## Approved Fiscal Year 1993 Water Quality Improvement Projects

State	Project Name	Affected Counties	Project Funding	Acres	Focus	Coordinator
Alabama	Crowdabout Creek	Morgan	199,000	27,000	Waste/Sediment	Joan Grider (205) 279-3515
	Duck Creek	Cullman	197,000	40,600	Waste/Sediment	
	Swift Creek	Chilton	146,000	21,400	Pesticides/Sediment	
Arizona	Maricopa Stanfield Coyote Creek	Pinal Apache	120,000 80,000	45,000 75,000	Nitrates/Pesticides Sediment/Nitrates	Rose Mari Leon (602) 640-5200
	Clear Creek Middle Crooked Creek	Washington Boone	188,000 189,000	50,000 44,861	Nutrients/Bacteria Nutrients/Waste	
Arkansas	Blue Bayou	Howard	95,000	9,660	Nutrients/Bacteria	Freda Lancaster (501) 324-5457
	Colusa Westside Fresno Western Stanislaus	Colusa Fresno Stanislaus	52,000 199,000 199,000	50,000 50,000 4,200	Pesticides Salts/Groundwater Pesticides/Sediment	
	Patterson Hollow San Luis Valley	Pueblo, Otero Alamosa, Rio Grande, Saguache Weld	199,000 80,000	45,000 50,000	Salts/Sediment Pesticides/Nutrients	
Colorado	Weld		167,000	26,386	Sediment/Nutrients	Garth Bond (303) 236-2866
	Yantic River	New London	120,000	61,400	Waste/Sediment	
Connecticut						Mark Ruwet (203) 285-8483
Delaware	Delaware River, Delaware Bay	Kent, Sussex	199,000	50,000	Nutrients/Sediment	Ben Titus (302) 573-6536
	St. Jones River	Kent, Sussex	88,000	7,500	Nitrates/Sediment	

Florida	Middle Suwannee River	Suwannee	40,000	32,640	Nutrients/Pesticides	Douglas Zant (904) 373-1253
	Palm Beach Northeastern Jackson	Palm Beach Jackson	190,000 40,000	48,640 46,080	Phosphorus/Nutrients Pesticides/Nutrients	
Georgia	North Oconee North Fork	Hall Stephens, Franklin	199,000 199,000	37,900 43,566	Nutrients/Sediment Nutrients/Sediment	David Perkins (706) 546-2257
Idaho	Eastern Snake River Plain Aquifer	Bingham	192,000	28,000	Nitrate/Pesticides	Jean Greear (208) 334-1762
	Lower Payette River Upper Deep Creek	Payette Twin Falls	199,000 151,000	33,405 10,111	Nitrates/Pesticide Sediments/Nutrients	
Illinois	Big Blue Creek	Pike	40,000	7,000	Sediment/Pesticides	Lisa Manning (217) 492-4670
	Richland/Dry Creek	Woodford	41,000	30,470	Sediment/Pesticides	
	Mississippi Karst	Monroe	199,000	48,350	Sediment/Pesticides	
Indiana	Fish Creek	Steuben, De Kalb	44,000	27,000	Sediment/Nutrients	Ron Birt (317) 290-3043
	Upper Laughery/Ripley Creek	Ripley	40,000	50,000	Sediment/Pesticides	
	Blue River	Whitley, Noble	151,000	48,750	Sediment/Nutrients	
Iowa	Iowa Great Lakes	Dickinson	88,000	30,600	Nutrients/Pesticides	Bill Hawks (515) 254-1540
	Yellow and Turkey River	Fayette, Winneshiek	123,000	46,080	Nitrogen/Pesticides	
	Pine Lake	Hardin, Grundy	143,000	9,680	Sediment/Nutrients	
Kansas	Smokey Hill	Saline	162,000	48,000	Nutrients/Pesticides	Roger Lemmons (913) 539-3534
	Howard City, Moline City Lake	Elk	80,000	11,200	Nutrients/Sediment	
	Big Bull Creek	Johnson	159,000	29,000	Phosphorus/Nitrogen	
Louisiana	Upper Tensas River	East Carroll	199,000	50,000	Sediment/Nutrients	Joseph Leray (318) 473-7738
	Lac Des Allemands	St. James, Ascension	195,000	45,600	Sediment/Nutrients	



Maine	Presumpscot River Eastern Meduxnekeag Webb Brook	Cumberland Aroostook  Hancock	48,000 68,000  40,000	94,523 42,240  23,735	Nutrients/Sediment Sediment/Nutrients  Sediment/Toxics	Melvin Perkins (207) 990-9140
Maryland	Upper Pocomoke  Upper Choptank Prettyboy Reservoir	Worcester, Wicomico Caroline Carroll, Baltimore	199,000  199,000 91,000	50,000  44,500 37,000	Phosphorus/Nitrogen  Nitrates/Sediment Nutrients/Sediment	Ilka Gray (410) 381-4550
Michigan	Mud Creek  Central Crockery Creek Quanicassee	Barry, Eaton Ionia Muskegon, Kent Ottawa, Newaygo, Bay, Saginaw, Tuscola	199,000  199,000 52,000	35,470  43,270 45,000	Sediment/Nutrients  Sediment/Nutrients  Sediment/Nutrients	Bob Payne (517) 337-6660
Minnesota	Getchell, Unnamed Creek St. Peter, Prairie Du Chien, Jordan Aquifer Moose Lake, Grant Creek	Stearns  Olmsted  Beltrami, Clearwater	199,000  159,000  199,000	49,664  87,040  62,969	Pesticides/Nutrients  Nitrates/Pesticides  Pesticides/Nutrients	Greg Anderson (612) 290-3659
Mississippi	Fannegusha Creek Pearl River Tuscumbia River	Scott, Rankin  Alcorn, Prentiss	182,000  199,000	48,360  25,000	Sediment/Nutrients  Sediment/Nutrients	Tom Breland (601) 965-5547

Missouri	North Salt River	Macon, Marion, Monroe, Ralls, Randolph, Shelby De Kalb, Clinton	196,000	15,000	Nutrients/Sediment	Gerald Hrdina (314) 876-0932
	Cameron - Grindstone Lake Harrisonville		197,000	16,647	Pesticides/Sediment	
		Cass	194,000	8,966	Nutrients/Sediment	
Montana	Bullhead	Pondera	199,000	46,400	Salinity/Sediment	Glenn Patrick (406) 587-6880
Nebraska	Red Willow	Red Willow, Hitchcock Garden Brown	199,000	48,640	Nitrates/Pesticides	Roger Hesman (402) 437-5277
	Central Garden Ainsworth Irrigation		167,000 199,000	26,300 49,780	Nitrates/Pesticides Sediment/Pesticides	
New Hampshire	Merrimack River Connecticut, Ammonoosuc River Piermont, Orford Tributaries	Rockingham Grafton Grafton	108,000 126,000 88,000	87,100 72,890 78,900	Pesticides/Waste Nutrients/Sediment Nutrients/Sediment	Linda Grames (603) 224-7941
New Mexico	Pecos River	Eddy	199,000	5,968	Salt Cedar/Dewatering	Nancy Chavez (505) 766-1504
New York	Upper Walkill Lake Champlain's Cumberland Bay Walkill River	Orange Clinton Ulster	159,000 147,000 24,000	50,000 80,553 96,203	Nutrients/Pesticides Phosphorus/Sediment Pesticides/Waste	Olen Sharron (315) 423-5211
North Carolina	Broad and Pungo Creek Long, Little Long Creek	Beaufort Gaston	199,000 199,000	85,000 28,400	Nutrients/Pesticides Sediment/Wastes	Phillip Farland (919) 790-2867

North Dakota	Red River RC&D 319	Pembina, Cavalier, Walsh	199,000	50,000	Sediment/Nutrients	Robert Muellenbach (701) 239-5258
	Bowman-Haley HUA	Bowman	96,000	99,940	Sediment/Nutrients	
	Goodman Creek	Mercer	120,000	59,000	Nutrients/Sediment	
	Thompson Township Upper Killbuck Creek	Seneca Wayne, Medina	161,000 199,000	22,379 35,345	Nitrates/Pesticides Waste/Nitrates	
Ohio	Lake Loramie	Shelby, Auglaize	199,000	49,728	Sediment/Nutrients	Mark Giles (614) 469-5702
Oklahoma	Lukfata Creek	McCurtain	62,000	56,000	Nutrients/Sediment	Garl Mardis (405) 624-4187
	Upper Poteau River	Le Flore	199,000	87,496	Nutrients/Sediment	
	Willow Creek	Caddo	199,000	26,880	Sediment/Pesticides	
Oregon	Upper Illinois	Josephine	145,000	49,790	Temperature/Sediment	Elizabeth Lissman (503) 692-6830
	Dairy Creek Ontario	Washington Malheur	199,000 183,000	40,000 50,000	Nutrients/Sediment Nitrates/Sediment	
Pennsylvania	Tulpehocken Creek	Berks, Lebanon	197,000	43,300	Nutrients/Sediment	Rex Wright (717) 782-4593
	Red and White Clay Creek	Chester	60,000	39,200	Sediment/Nutrients	
	Shenango River	Mercer	199,000	50,000	Nutrients/Sediment	
South Dakota	Lower Bad River	Stanley, Jones, Lyman	81,000	100,000	Sediment/Wastes	Ronald Larson (605) 353-1840
	Big Sioux Aquifer	Brookings, Moody	63,000	49,600	Nutrients/Pesticides	
	Pickrel Lake	Day	51,000	15,015	Nitrogen/Nutrients	
Tennessee	Davis Creek/Clinch-Powell Rivers	Claiborne, Campbell	86,000	53,400	Sediment/Nutrients	William Hancock (615) 736-5551
Texas	Oak Creek, Trammell	Nolan	199,000	50,000	Sediment/Chemicals	Darrell Davis (409) 260-9381



Utah	Rabbit Valley Otter Creek Koosharem Little Bear	Wayne Piute, Sevier  Cache	36,000 96,000  159,000	16,738 36,000  92,000	Sediment/Nutrients Sediment/Nutrients  Sediment/Phosphorus	Dennis Tuttle (801) 524-3263
	Mallets Bay Brown's River	Chittenden Chittenden, Franklin, Lamoille	40,000 40,000	24,640 58,800	Nutrients/Sediment Nutrients/Sediment	Alan Rogers (802) 951-6715
	Lower Lamoille River	Chittenden, Franklin, Lamoille	56,000	100,000	Waste/Sediment	
Virginia	Columbia Chesapeake Muddy Creek Flat Creek	Accomack  Rockingham Amelia, Nottoway	199,000 80,000 199,000	47,000 20,005 90,000	Nitrogen/Phosphorus  Wastes/Pesticides Wastes/Sediment	Wilson Leggett, Jr. (804) 287-1531
	Portage Creek Nookachamps	Snohomish Skagit	106,000 96,000	13,654 48,700	Bacteria/Nutrients Waste/Nutrients	Stan Liebing (509) 353-2302
	Opequon Creek South Branch of Potomac Shenandoah	Berkeley Hampshire  Jefferson	103,000 152,000 80,000	49,575 98,268 49,662	Nutrients/Pesticides Nutrients/Pesticides  Nutrients/Wastes	Clifford Sypolt (304) 291-4351
Wisconsin	Fall Creek Stevens Point, Whiting, Plover East River	Pepin Portage  Brown, Calumet, Manitowoc	179,000 199,000 199,000	10,822 69,100 18,125	Nitrates Nutrients/Pesticides  Sediment/Nutrients	Susan Butler (608) 264-5310



## Approved Fiscal Year 1994 Water Quality Improvement Projects

State	Project Name	Affected Counties	Acres	Funding	Focus	Coordinator
Alabama	Blackburn Fork Double Bridges Creek	Blount	64,600	300,000	Waste/Sediment	Joan Grider (205) 279-3515
	Northeast Yellow River	Coffee, Geneva	116,000	300,000	Waste/Sediment	
		Covington, Coffee, Crenshaw	101,200	300,000	Sediment/Waste	
Arkansas	Lower Reach of the Poteau River	Scott	61,680	229,000	Nitrogen/Phosphorus	Freda Lancaster (501) 324-5457
	Middle Reach of Kings River	Madison	42,128	275,000	Nitrogen/Bacteria	
	Osage Creek of Illinois River	Benton	53,536	300,000	Nitrogen/Bacteria	
	Second Creek of L'anguille River	Woodruff, Cross, St. Francis	38,400	300,000	Sediment/Nutrients	
	Western Stanislaus	Stanislaus				
California			4,200	76,000	Chlorine/Sediment	Larry Plumb (916) 551-1801
Delaware	Delaware River	New Castle	63,500	136,000	Nutrients/Sediment	Ben Titus (302) 573-6536
Georgia	Middle Fork Broad River	Franklin, Stevens	98,703	300,000	Nutrients/Sediment	David Perkins (706) 546-2257
	Shoal Creek	Habersham, Banks				
	Soap Creek	Hart, Franklin	57,067	300,000	Nutrients/Sediment	
	Upper Chattooga	Lincoln, Wilkes	80,778	203,000	Nutrients/Sediment	
	River and Upper Chickamauga Creek	Chattooga, Walker	62,500	203,000	Nutrients/Sediment	

Illinois	Decatur Tribs Glenn Shoals Laclede Otter Lake	Macon Montgomery Fayette Macoupin	23,840	200,000	Nitrates/Sediment Sediment/Soil Nutrients Chemicals/Atrazine Sediment/Pesticides	Lisa Manning (217) 492-4670
			56,220	297,000		
			4,400	62,000		
			12,990	86,000		
Indiana	Upper Laughery/Ripley Creek Watershed	Ripley, Decatur, Franklin	64,000	253,000	Sediment/Chemicals	Ron Birt (317) 290-3043
Iowa	Beed's Lake Ellis, Morris, Red Haw Lakes Lake Icaria Storm Lake	Franklin Lucas	18,966	300,000	Sediment/Nutrients Sediment/Nutrients	Bill Hawks (515) 254-1540
			6,276	127,000		
		Adams Buena Vista	17,500	237,000	Sediment/Livestock Waste Nutrients/Pesticides	
			18,000	300,000		
Kentucky	Fleming Creek Strodes Creek Watershed	Fleming Bourbon, Clark	61,670	152,000	Sediment/Nutrients Bacteria/Sediment	Tom Howard. (606)224-7680
			51,020	101,000		
Maine	Bagaduce Narrows Watershed Chandler and Indian River Watershed Orland River Watershed	Hancock	44,500	51,000	Sediment/Toxics	Melvin Perkins (207) 990-9140
					Pesticides/Fertilizers	
		Washington	75,717	136,000		
		Hancock	63,720	51,000	Sediment/Toxics	
Maryland	Lower Elk River Sassafras River Zekiah Swamp	Cecil Kent	48,500	253,000	Nitrogen/Pesticides Nitrogen/Phosphorus Nitrogen/Pesticides	Ilka Gray (410) 381-4550
			32,000	253,000		
		Charles, Prince Georges	62,303	128,000		
Michigan	Duff Creek Watershed Paw Paw River Basin Sycamore Creek Watershed	Sanilac	10,400	188,000	Sediment/Phosphorus Nitrate/Pesticides Sediment/Nitrogen	Bob Payne (517) 337-6660
		Van Buren Ingham	26,030	300,000		
			67,738	300,000		

Minnesota	Middle Branch Whitewater River Stony/Getchel/ Unnamed Creeks	Olmsted, Winona	38,600	152,000	Nitrates/Sediment	Greg Anderson (612) 290-3659
		Stearns	63,976	300,000	Phosphorus/Nutrients	
Missouri	Lewistown - LaBelle Marceline City Lake Smithville Lake	Lewis Chariton, Linn Clay, Clinton, De Kalb	1,873 2,400 126,100	93,000 85,000 292,000	Atrazine/Nutrients Atrazine/Sediment Atrazine/Sediment	Gerald Hrdina (314) 876-0932
Montana	Fort Shaw Irrigation Area	Cascade	10,225	177,000	Nitrates/Salts	Glenn Patrick (406) 587-6880
Nebraska	Frenchman/ Republican Holt County Recharge Lake Pesticide Management Seward Wellhead Protection Area	Hitchcock, Red Willow Holt York Seward	64,000 63,040 7,400 5,264	300,000 300,000 202,000 180,000	Nitrate/Atrazine Nitrate/Atrazine Atrazine/Nitrates Nitrates	Roger Hesman (402) 437-5277
New Jersey	Lower Musconetcong	Hunterdon, Warren, Morris	38,397	201,000	Nutrients/Pesticides	Nancy Coles (609) 298-3446
New York	Deer River Lake Neatawhanta Pike Creek	Lewis Oswego Franklin	62,129 10,800 20,445	113,000 106,000 200,000	Nutrients/Pesticides Nutrients/Sediments Silt/Nutrients	Olen Sharron (315) 423-5211
North Dakota	Big Coule Dam Renwick, Homme, & Mt. Carmel and Icelamdic Aquifer	Roulette, Towner Pembina, Cavalier, Walsh	26,440 47,000	300,000 300,000	Soil/Nutrients Sediment/Nutrients	Robert Muellenbach (701) 239-5258



Ohio	Dillion Lake Watershed	Muskingum	39,575	53,000	Fecal Coliform/ Nitrates	Mark Giles (614) 469-5702
	Sandusky River Head Waters	Crawford, Richland	51,550	300,000	Sediment/Nutrients	
	Swamp Creek Watershed	Darke	40,896	223,000	Nutrients/Sediment	
Oregon	Dairy Creek Watershed	Washington	64,000	300,000	Phosphorus/Nutrients	Elizabeth Lissman (503) 692-6830
	Lower Umatilla Basin	Umatilla	64,000	162,000	Nitrates	
	Ontario	Malheur	64,000	300,000	Nitrates/Sediment	
Pennsylvania	Jordan Creek Watershed	Lehigh	52,074	96,000	Nutrients/Sedimentation	Rex Wright (717) 782-4593
	Neshaminy Creek Watershed	Bucks	34,472	162,000	Nutrients/Sedimentation	
South Carolina	Chattooga/ Tugaloo/Chauga	Oconee	128,000	300,000	Pesticides/Sediments	Linda Floyd (803) 253-3279
	Salkehatchie	Allendale, Bamberg	128,000	296,000	Pesticides/Sediments	
		Colleton, Hampton				
	Sea Islands	Charleston	96,675	292,000	Nutrients/Pesticides	
South Dakota	Big Stone Lake/ Long Hollow Creek	Roberts	48,614	120,000	Sediments/Phosphorus	Ronald Larson (605) 353-1840
	Lodgepole Creek	Perkins	60,848	76,000	Sediment/Nutrients	
	Sub-Watershed	Edmunds,	36,000	298,000	Phosphorus/Nitrogen	
	Mina Lake	McPherson, Brown				
Utah	Piute-Marysvale	Piute	102,900	300,000	Sedimentation/Turbidity	Dennis Tuttle (801) 524-3263
	Upper Sanpitch River - Gunnison	San Pete	60,720	300,000	Sedimentation/Turbidity	
	Reservoir					
	Chalk Creek Watershed	Summitt, Utah	125,000	300,000	Sediment/Nutrient	

Vermont	Lower Winooski River Watershed	Addison, Chittenden	125,880	116,000	Phosphorus/Sediments	Alan Rogers (802) 951-6715
Virginia	Northampton County	Northampton	64,000	203,000	Nitrogen/Phosphorus	Wilson Leggett, Jr. (804) 287-1531
Washington	Columbia Basin	Grant	47,540	120,000	Sediment/Nutrients	Stan Liebing (509) 353-2302
West Virginia	Lost River	Hardy	117,200	182,000	Animal Waste/Nutrients	Clifford Sybolt (304) 291-4351
Wisconsin	Stevens Point, Whiting, Plover Wellhead Protection	Portage	69,100	203,000	Nitrates/Pesticides	Susan Butler (608) 264-5310

# Management System Evaluation Areas

Contamination of the nation's ground and surface water supplies from the normal use of pesticides and nitrogen has caused concern about the impact of agricultural practices on the quality of our drinking water. Groundwater is the primary source of drinking water for nearly 90 percent of our rural population and more than 40 percent of the total population.

While field application of chemicals is not the only source of contamination, the presence of agricultural chemicals in surface and groundwater has focused concern on current agricultural practices. To assess the effects of management practices and improve them where necessary, several different USDA and State programs have been brought together. The overall goal is to safeguard and enhance the quality of the nation's surface waters and groundwater in the presence of sustained agricultural activities. Activity to achieve this goal is being carried out at each of the five key Management System Evaluation Areas (MSEA) sites where the impact of current and emerging farming systems and practices are being evaluated.

The initial study is focused in the Midwest on five MSEAs. These areas are located in Iowa with two satellite locations; Minnesota with three satellite locations; Missouri, Nebraska, and Ohio and are delineated to study the complex interactions of soil, weather, water, chemicals, economics, and farm management systems.

Cooperating agencies involved in the MSEA project are:

United States Department of Agriculture:

- ◆ Agricultural Research Service
- ◆ Cooperative State Research Service
- ◆ Economic Research Service

- ◆ Extension Service
- ◆ Soil Conservation Service
- United States Geological Survey
- United States Environmental Protection Agency
- State Agricultural Experiment Stations
- Cooperative Extension System
- State Departments of Agriculture
- State Resource and Pollution Control Agencies
- Private organizations and industries

## MSEA Management Team

### ARS:

Jerry Hatfield  
National Soil Tilth Laboratory  
2150 Pammel Drive  
Ames, Iowa 50011  
Tel: 515-294-5723  
Fax: 515-294-8125

### CSRS/SAES:

Leo Walsh  
Department of Soil Science  
University of Wisconsin  
Madison, WI 53706  
Tel: 608-262-3250  
Fax: 608-265-2595

### EPA:

Robert Swank  
Athens Research Lab  
960 College Station Road  
Athens, GA 30605  
Tel: 706-546-3128  
Fax: 706-546-2018

### USGS:

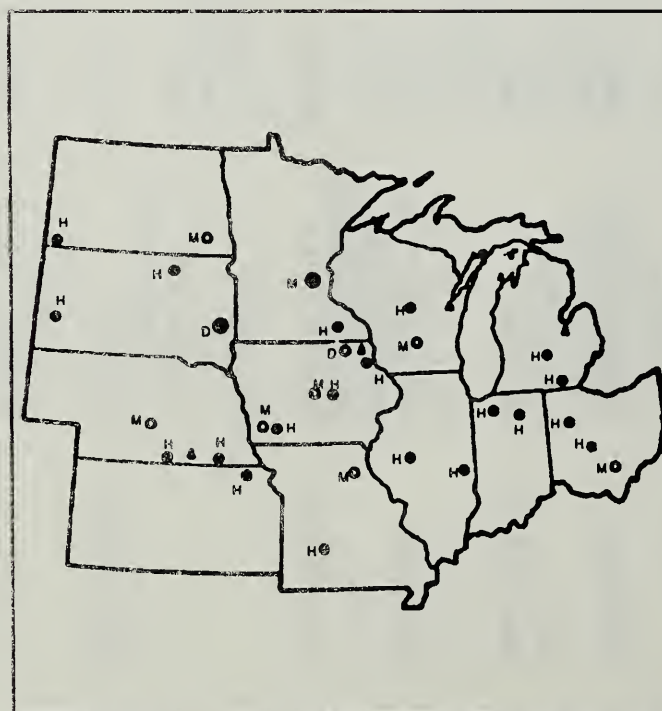
Michael R. Burkart  
Room 269  
400 S. Clinton St.  
Iowa City, IA 52244  
Tel: 319-337-4191  
Fax: 319-354-0510

### ES:

Steve Oberle  
National Soil Tilth Laboratory  
2150 Pammel Drive  
Ames, IA 50011  
Tel: 515-294-2421  
Fax: 515-294-8125

### SCS:

Gerald Montgomery  
Federal Building, Room 152  
100 Centennial Mall North  
Lincoln, NE 68508  
Tel: 402-437-5384  
Fax: 402-437-5165



M: MSEA site

H: HUA site

D: Demonstration site



# Agricultural Chemical Use Surveys

## (Comprehensive Accounting of Applications of Pesticides and Fertilizers)

As a result of the water quality and food safety initiatives, NASS and ERS were delegated the responsibility for developing an agricultural chemical use database. To develop this database, NASS and ERS began a series of statistical surveys in 1989. The following is an outline of those surveys:

### Contact:

Marc Ribaud, ERS 202-219-0404  
Sam Rives, NASS 202-720-3896

### 1989

- ◆ Cotton Survey--14 major cotton states--Publication, December 1990

### 1990

- ◆ Field Crops--Includes corn, cotton, potatoes, rice, soybeans, and wheat in major producing states--Publication, March 1991

- ◆ Vegetables--Includes all vegetables, melons, and strawberries--States included are Arizona, California, Florida, Michigan and Texas--Publication, June 1991

### 1991

- ◆ Field Crops--Includes corn, cotton, peanuts, sorghum, potatoes, rice, soybeans, and wheat in major producing states--Publication, March 1992

- ◆ Fruits and Nuts--All major fruit and nut commodities--15 major producing states--Covers approximately 85 percent of U.S. fruit and nut acreage--Publication, June 1992

### 1992

- ◆ Field Crops--Includes corn, cotton, potatoes, rice, soybeans, and wheat in major producing states--Publication, March 1993

- ◆ Vegetables--Includes all major vegetable commodities, melons, and strawberries--14 States--Publication, June 1993

### 1993

- ◆ Field Crops--Includes corn, cotton, potatoes, soybeans, and wheat in major producing states--Publication, March 1994

- ◆ Fruits and Nuts--All major fruit and nut commodities--9 major producing states--Covers approximately 85 percent of U.S. fruit and nut acreage--Publication, June 1994

# Water Quality Research Projects

## Agricultural Research Service, Cooperative Research Service, State Agricultural Experiment Stations

Both the Agricultural Research Service (ARS) and the Cooperative State Research Service (CSRS) fund basic research programs on water quality. A joint research program between ARS, CSRS and the State Agricultural Experiment Stations (SAES) was established to gain a better understanding of the impacts of agricultural production systems on water quality and to develop agricultural systems that are both economically and environmentally beneficial.

The research program consists of a National Priority Components Research Program of competitively awarded grants administered by CSRS with the cooperation of SAES; and the Midwest Initiative on Water Quality conducted through five Management Systems Evaluation Areas (MSEA) by ARS, CSRS, and SAES in cooperation with the U.S. Geological

Survey and the U.S. Environmental Protection Agency. Under the Priority Components Research Program, Since 1989, CSRS has awarded 199 Special Research Grants in water quality, and ARS has awarded 62. The focus of the ARS and CSRS water quality research projects are in five areas having a potential impact from agricultural systems on water quality: fundamental processes, diagnostic methodology, production systems, decision aids and information systems, and socio-economic implications.

A list of the ARS and CSRS/SAES projects funded in FY 1992 and FY 1993 are listed. For telephone numbers or addresses of the Principal Investigator of CSRS Grants contact Dr. Berlie L. Schmidt or Dr. Maurice Horton at 202-401-4514.

## USDA Water Quality Program Targeted ARS Research Projects

State	Project Title	Research Unit	Amount	Project Leader
Arizona	Water quality model decision-support systems	Southwest Watershed Research Unit, Tucson	\$200,000	L.J. Lane (602) 670-6381
Arizona	Nitrogen fertilizer and water transport under 100% irrigation efficiency	U.S. Water Conservation Lab., Phoenix	\$225,000	H. Bouwer (602) 379-4356
Arizona	Quasi-point sources of agricultural groundwater contamination	U.S. Water Conservation Lab., Phoenix	\$135,000	H. Bouwer (602) 379-4356
California	Water quality management on westside San Joaquin Valley	Water Management Research Unit, Fresno	\$90,000	C.J. Phene (209) 453-3100
California	Managing shallow ground water in arid irrigated areas	Water Management Research Unit, Fresno	\$135,000	C.J. Phene (209) 453-3100
California	Development of an integrated salt-loading assessment methodology for managing soil salinity	U.S. Salinity Lab., Riverside	\$135,000	J.D. Rhoades (909) 369-4814
California	Development of practical solute models for the management of irrigated salt-affected soils	U.S. Salinity Lab., Riverside	\$175,000	R. van Genuchten (909) 369-4814
California	Chemistry of potentially toxic trace elements in irrigated soils and drainage waters	Soil/Water Chemistry Research, Riverside	\$135,000	D.L. Suarez (909) 369-4814
California	Water and pesticide management combinations for reducing pesticide movement to groundwater	Pesticide/Water Quality Research, Riverside	\$135,000	W.F. Spencer (714) 787-5145
Colorado	Nitrogen management to protect groundwater quality	Soil-Plant Nutrient Research, Fort Collins	\$100,000	R.F. Follett (303) 490-8200



Colorado	Water and nitrogen management to protect groundwater	Water Management Research, Fort Collins	\$270,000	D.F. Heermann (303) 491-8511
Colorado	Model root zone water and chemical dynamics	Great Plains Systems Research, Fort Collins	\$225,000	L.R. Ahuja (303) 490-8300
Georgia	Develop decision aids and other model-based systems for enhancing water quality and farm profitability	Southeast Watershed Research, Tifton	\$197,000	R.A. Leonard (912) 386-7173
Georgia	Use of re-established riparian forest to control water pollution from a manure application site	Southeast Watershed Research, Tifton	\$270,000	R.R. Lowrance (912) 386-7173
Georgia	Agrichemical transport and controlling processes in Claiborne Aquifer recharge area of Southwest Georgia	Southeast Watershed Research, Tifton	\$135,000	R. A. Leonard (912) 386-7173
Georgia	Upland agricultural non-point source contributions to riparian forests and other buffer systems	Southeast Watershed Research, Tifton	\$135,000	D.D. Bosch (912) 386-3899
Idaho	Integrated agronomic and irrigation management systems to reduce nitrate leaching	Soil/Water Management Research, Kimberly	\$270,000	D.L. Carter (208) 423-6565
Illinois	Weed management and application techniques for groundwater quality protection	Crop Production Research Unit, Urbana	\$170,000	L.M. Wax (217) 244-0996
Indiana	Controlled release herbicide formulations -- efficacy and role in reducing groundwater contamination	Insect/Weed Control Research, West Lafayette	\$150,000	M.M. Schreiber (317) 499-4604
Iowa	Analytical detection of chemicals in soil and groundwater	National Soil Tilth Lab., Ames	\$500,000	J.L. Hatfield (515) 294-5723
Iowa	Development of farming management systems to improve water quality	National Soil Tilth Lab., Ames	\$150,000	J.L. Hatfield (515) 294-5723

Iowa	Decision-aid systems for farm management and water quality	National Soil Tilth Lab., Ames	\$150,000	J.L. Hatfield (515) 294-5723
Iowa	Impact of preferential flow on chemical and water movement in agricultural systems	National Soil Tilth Lab., Ames	\$150,000	J.L. Hatfield (515) 294-5723
Iowa	Transport and chemical transformation of pesticides in agricultural systems	National Soil Tilth Lab., Ames	\$150,000	J.L. Hatfield (515) 294-5723
Iowa	Evaluation of farming management systems on groundwater quality	National Soil Tilth Lab., Ames	\$575,000	J.L. Hatfield (515) 294-5723
Iowa	Effects of conservation tillage on pesticide fate and water quality	National Soil Tilth Lab., Ames	\$270,000	T.B. Moorman (515) 294-2308
Louisiana	Integrated water table and tillage/fertilizer/pesticide management to improve water quality	Soil/Water Research Unit, Baton Rouge	\$180,000	G.H. Willis (504) 387-0327
Maryland	Bioremediation of contaminated sites to protect water quality	Soil-Microbial Systems Lab., Beltsville	\$60,000	W.W. Mulbry (301) 504-5872
Maryland	ARS pesticide properties database	Systems Research Lab., Beltsville	\$75,000	B. Acock (301) 504-5872
Maryland	Minimizing effect of macropore flow on pesticide and nitrogen leaching	Environmental Chemistry Lab., Beltsville	\$90,000	A.R. Isensee (301) 504-5533
Maryland	Minimizing preferential transport of pesticides and nitrogen to groundwater	Hydrology Lab., Beltsville	\$125,000	T.J. Gish (301) 504-8378
Maryland	Combining crop and 2-D soil models to minimize groundwater pollution	Systems Research Lab., Beltsville	\$65,000	B. Acock (301) 504-5872
Maryland	Spatial and temporal distribution of air-borne organic contaminants in wet and dry deposition	Environmental Chemistry Lab., Beltsville	\$225,000	C. Rice (301) 504-6511

Maryland	Mutagenicity of groundwater	Lipid Nutrition Lab., Beltsville	\$130,000	P.P. Nair (301) 504-8195
Maryland	Develop improved nitrogen management practices to reduce nitrate contamination of groundwater	Environmental Chemistry Lab., Beltsville	\$235,000	J.J. Meisinger (301) 504-6511
Maryland	Sources of mutagenic substances in ground and surface water	Environmental Chemistry Lab., Beltsville	\$145,000	R.J. Wright (301) 504-6511
Minnesota	Effects of soil freezing on the fate of soil-applied nitrogen and pesticides	North Central Conservation Research Lab., Morris	\$160,000	W.B. Voorhees (612) 589-3411
Minnesota	Weed-emergence modeling for a weed/crop bioeconomic expert system	North Central Conservation Research Lab., Morris	\$120,000	F. Forcella (612) 589-3411
Minnesota	Sorption-desorption process affecting pesticide mobility in tilled soils	Soil/Water Management Research Unit, St. Paul	\$165,000	C.E. Clapp (612) 625-2767
Minnesota	Midwest initiative on water quality: Northern Cornbelt Sand Plain Project	Soil/Water Management Research Unit, St. Paul	\$385,000	R.R. Dowdy (612) 615-9270
Minnesota	Develop alfalfa to increase N <sub>2</sub> fixation and reduce nitrogen losses to the environment	Plant Science Research, St. Paul	\$225,000	M.P. Russelle (612) 625-8145
Mississippi	Effect of conservation tillage practices on agrichemical transport through the fragipan of loessial soils	Water Quality and Ecology Research, Oxford	\$75,000	C.M. Cooper (601) 232-2935
Mississippi	Improve water quality by development of more efficient methods of applying herbicides	Field Crops Mechanization, Stoneville	\$270,000	J.E. Banks (601) 686-5221
Mississippi	Reduce herbicide contamination of surface water by using alternative management systems/cotton production	Herbicide Interactions in and Soils Research, Stoneville	\$75,000	M.A. Locke (601) 686-5221
Missouri	Alternative management systems for enhancing water quality of an aquifer underlying claypan soils	Cropping Systems/Water Quality Research Unit, Columbia	\$370,000	E.E. Alberts (314) 882-1144



Missouri	Tripsacum and corn relatives for optimizing production practices affecting groundwater quality	Plant Genetics Research, Columbia	\$225,000	E.H. Coe, Jr. (314) 882-276
Nebraska	Management of irrigated corn and soybean to minimize groundwater contamination	Soil/Water Conservation Research Unit, Lincoln	\$385,000	J.S. Schepers (402) 472-1513
Nebraska	Management of soil water and nitrogen resources to protect groundwater quality	Soil/Water Conservation Research Unit, Lincoln	\$150,000	J.F. Power (402) 472-1484
Nebraska	Protecting ground water quality using corn tissue analysis to program N fertilizer: use of chlorophyll meters	Soil/Water Conservation Research Unit, Lincoln	\$50,000	J.S. Schepers (402) 472-1513
Ohio	Water-table management for crop production and groundwater quality protection	Soil Drainage Research Unit, Columbus	\$100,000	N.R. Fausey (614) 292-9806
Ohio	Ohio Buried Valley Aquifer Management Systems Unit, Evaluation Area (MSEA)	Soil Drainage Research Columbus	\$320 ,000	N.R. Fausey (614) 292-9806
Ohio	Surface-subsurface water chemical movement and inter-actions on agricultural watersheds	North Appalachian Experimental Watershed, Coshocton	\$45,000	J.V. Bonta (614) 545-6349
Oklahoma	Water quality implications of playa lake containment of feedlot waters	Water Quality/Watershed Research Lab., Durant	\$100,000	S.J. Smith (405) 924-5066
Oklahoma	Prevention of groundwater contamination by new agricultural production systems	Water Quality/Watershed Research Lab., Durant	\$100,000	S.J. Smith (405) 924-5066
Pennsylvania	Controls on phosphorus export from agricultural hill land watersheds	Northeast Watershed Research Center, University Park	\$100,000	H.B. Pionke (814) 863-0939
Pennsylvania	Riparian zone controls on nitrogen entry into northeastern streams	Systems and Watershed Management Research, University Park	\$100,000	H.B. Pionke (814) 863-0939

South Carolina	Water quality evaluation for Duplin County Demonstration project	Soil/Water Conservation Research Unit, Florence	\$150,000	P.G. Hunt (803) 669-5203
South Carolina	Reduction of shallow ground water contaminants in southeastern coastal plains	Soil/Water Conservation Research Unit, Florence	\$225,000	P.G. Hunt (803) 669-5203
South Dakota	Develop technologies to manage corn rootworm population with reduced insecticide inputs	Northern Grain Insects Research Lab., Brookings	\$125,000	G.R. Sutter (605) 693-5217
Texas	Develop comprehensive water quality management models	Grassland Soil/Water Research Lab., Temple	\$275,000	J.R. Williams (817) 770-6508
Texas	Rainfall-induced runoff and erosion from irrigated lands--Southern High Plains	Water Management Research, Bushland	\$95,000	T.A. Howell (806) 356-5746
West Virginia	Water quality impacts of agriculture in southeast	Appalachian Soil/Water Research Lab., Beckley	\$80,000	D.J. Boyer (304) 252-6426

**SPECIAL RESEARCH GRANTS PROGRAM - 1992**  
**Water Quality**

<b>State</b>	<b>Project Title</b>	<b>Research Unit</b>	<b>Amount</b>	<b>Research Leader</b>
Alabama	Subsurface Transport and Mixing of Dense Leachates Near the Groundwater Table	Auburn University	\$120,000	J. Dane
Arizona	Coupled Biotransformation and Transport of Nitrogen and Organic Compounds in Soil	University of Arizona	\$119,988	T. Thompson
California	Soil Desorption Kinetics of Pesticides In Response To Solution Properties	University of California, Davis	\$119,790	J. Biggar
California	Application of Industrial X-Ray Tomography to Transport of Organic Solvents and Pesticides in Soil	University of California, Davis	\$135,000	J. Hopmans
Colorado	Interactions of Anthropogenic Nitrogen Compounds with Soil Organic Matter	USGS National Water Quality Lab	\$200,000	K. Thorn
Colorado	Protecting Water Quality By Scouting Weed Populations for Efficient Management	USDA Crops Research Lab	\$185,000	E. Schweizer
Florida	Modeling the Fate and Transport of Nitrogen-Fertilizers, Diazonon, and Bromide Applied to Bahiagrass	University of Florida	\$130,000	P. Nkedi-Kizza
Georgia	Non-Destructive Identification and Sampling of Vadose Zone Preferential Pathways	USDA Southeast Watershed Laboratory	\$150,000	D. Bosch



Georgia	Nitrogen and Phosphorus Losses From Untreated and Composted Poultry Litter	University of Georgia	\$200,000	M. Cabrera
Georgia	Measurement and Modeling of Nitrate Transport Under Conventional and No-Tillage Management	University of Georgia	\$120,000	J. Johnson
Iowa	Localized Compaction and Drilling to Increase N-Use Efficiency and Reduce Leaching	Iowa State University	\$100,000	J. Baker
Iowa	Managing Water Quality and Livestock Production in a Southern Iowa Watershed	Iowa State University	\$125,000	R. Jolly
Iowa	Constructed Multi-Species Riparian Buffer Strips as a Best Management Practice	Iowa State University	\$134,415	R. Schultz
Idaho	Use of Brassica spp. in Biocontrol Strategies	University of Idaho	\$ 95,000	M. Morra
Illinois	Fed Coating Influence on Pesticide Transport	University of Illinois	\$ 80,000	W. Banwart
Kansas	Variable Nitrogen Management for Improving Groundwater Quality	Kansas State University	\$124,000	J. Havlin
Kentucky	Manure Applied to Shallow, Well-Drained Soils: Improving Groundwater Quality	University of Kentucky	\$130,000	J. Grove
Kentucky	Agricultural BMP's and Surface Water-Groundwater Interaction in Karst Terrane	University of Kentucky	\$225,000	J. Taraba
Massachusetts	Nitrate Leaching in Manured Alfalfa and the Alfalfa-Corn Rotation	University of Massachusetts	\$113,943	S. Hebert

Massachusetts	Protecting Groundwater Resources and Farm Profitability via Pest Control Advice	University of Massachusetts	\$118,610	L. Moffitt
Michigan	Management Effects on a Colloid-Enhanced Transport of Herbicides and Phosphorous	Michigan State University	\$105,717	S. Anderson
Michigan	Pesticide Transport in Unsaturated Soil Under Unstable Flow Conditions	Michigan Tech University	\$120,000	J. Gierke
Minnesota	Groundwater Contamination from Depression Focused Recharge	University of Minnesota	\$130,000	B. Wilson
Minnesota	Tillage and Manure Interactions in Subsurface Water Quality in Karst Terrains	University of Minnesota	\$220,000	J. Moncrief
Missouri	Probabilistic Risk and Sensitivity for Unsaturated Flow and Transport	University of Missouri, Rolla	\$120,000	J. Cawfield
Missouri	Nonoperator Farmowner Adoption of Improved Groundwater Protection Strategies	University of Missouri	\$ 98,416	J. Rikoon
North Carolina	Distinguishing Animal and Human Fecal Contamination of Water Using Enteric Viruses	University of North Carolina	\$110,000	M. Sobsey
Nebraska	Improvement of Water Quality by Use of a Sensor Controlled Intermittent Sprayer	University of Nebraska	\$110,000	K. Von Bargen
Nebraska	Risk-Cost Management for Nitrate Contaminated Groundwater Under Uncertainties	University of Nebraska	\$110,000	M. Dahab
Nebraska	Evaluation of Irrigation Wells as Sampling Mechanisms	University of Nebraska	\$122,102	D. Gosselin
Nebraska	A Sampling Strategy to Better Assess the Vertical Movement of Agrichemicals	University of Nebraska	\$125,000	W. Powers

Nebraska	Stochastic Analysis and Simulation of Time-Dependent Solute Transport in Soils	University of Nebraska	\$168,000	Y. Zhang
New Mexico	Plant Uptake and Plant Toxicity of Fluorobenzoate Soil and Groundwater Tracers	New Mexico Institute of Mining and Technology	\$120,000	R. Bowman
New York	Groundwater Denitrification: The Importance of Surface and Subsurface Carbon Sources	Institute of Ecosystems Studies	\$120,000	P. Groffman
New York	Weed, Water and Soil Management Practices to Reduce Leaching of Agricultural and Orchard Chemicals in Tile Lines and Shallow Ground	Cornell University	\$115,000	M. Walter
Oklahoma	Micellar Electrokinetic Capillary Chromatography of Pesticides	Oklahoma State University	\$ 89,224	Z. El Rassi
Oklahoma	Economic and Environmental Impacts of Water Quality Protection Policies in the High Plains	Oklahoma State University	\$ 37,620	H. Mapp
Oregon	Analysis of Microbial Processes Pertaining to Water Quality in the Vadose Zone	Oregon State University	\$124,000	L. Boersma
Oregon	Regulating Movement of Nitrates into Groundwater: An Aggregate Economic Analysis	Oregon State University	\$170,338	G. Perry
Pennsylvania	Effects of Natural Organic Matter on Fate of Inorganic Ions in Groundwater Systems	Carnegie Mellon University	\$120,000	D. Dzombak
Pennsylvania	Improved Pesticide Delivery Systems by Addition of Microbial Enzymes	USDA-ARS	\$119,000	W. Fett
Pennsylvania	Evaluation of Nitrate Leaching Computer Models Using Detailed In Situ Data	Pennsylvania State University	\$129,000	R. Fox



Pennsylvania	Groundwater Pollution Potential in Pennsylvania: A GIS Assessment	Pennsylvania State University	\$120,000	J. Hamlett
Pennsylvania	Farm Specific Economic Thresholds As a Strategy for Simulating Adoption of Improved Nitrogen Management	Pennsylvania State University	\$ 95,000	R. Weaver
Texas	Decision Support System for the MSEA/MASTER Program	University of Texas	\$ 60,000	D. Maidment
Utah	Fertilizer Nitrogen Dynamics Under Minimum-Leaching Irrigation Management	Utah State University	\$105,000	J. Stark
Washington	Analysis of the Potential for Degradation of Carbofuran in Soil Profiles	Washington State University	\$195,000	A. Ogram

# **WATER QUALITY SPECIAL RESEARCH GRANTS PROGRAM - 1992** **Nitrogen Testing**

<b>State</b>	<b>Project Title</b>	<b>Research Unit</b>	<b>Amount</b>	<b>Research Leader</b>
Alabama	Technology to Prevent Nitrate Contamination of Groundwater Under Grains Crops	Auburn University	\$59,964	C.W. Wood
Arizona	Development of Best Management Practices for Nitrogen and Water Use In Irrigated Broccoli and Cauliflower Production	University of Arizona	\$59,986	Thomas Doerge
Arkansas	Assessing Midseason, Nitrogen Requirements of Rice Using Canopy Image Analysis	University of Arkansas	\$60,000	William W. Casady
California	Fertilizer Management and Plant Nitrogen Testing in Deciduous Orchard Crops	University of California, Davis	\$57,511	Patrick H. Brown
California	Economic Cost-Benefit Analysis and Technical Education for Adoption of Nitrogen Testing Programs in Large-Scale Vegetable Production Systems	University of California, Davis	\$59,684	Louise E. Jackson
Colorado	Reducing Nitrate Leaching Through In-Season Soil Nitrate and Leaf Chlorophyll Testing	Colorado State University	\$59,523	Parviz Soltanpour
Georgia	Monitoring Nitrate in Solid In Situ Using Inexpensive Coated-Wire Electrodes	Georgia Experiment Station	\$55,511	Larry M. Shuman
Indiana	A Real-Time Soil Nitrate Sensor	Purdue University	\$58,767	Lawrence D. Gaultney
Iowa	Assessment of Soil Nitrogen Tests in Animal-Based Farming Systems: Iowa	Iowa State University	\$56,348	Randy J. Killorn
Louisiana	Development of an N Test for Cotton Grown in the Humid Southeast	LSU Agricultural Center	\$57,864	Gary A. Breitenbeck
Minnesota	Assessment of Soil Nitrogen Tests in Animal-Based Farm Systems: Minnesota	University of Minnesota	\$56,093	Gyles W. Randall

Minnesota	Petiole Sap Nitrate Test for Predicting Nitrogen Needs of Irrigated Potatoes	University of Minnesota	\$59,895	Carl J. Rosen
Montana	Resin Capsule Test for N Availability to Crops and Leaching Potential	Montana State University	\$58,949	Earl O. Skogley
Nebraska	Calibration of Residual Soil Nitrate for Predicting Supplemental N for Sorghum	University of Nebraska	\$51,170	Donald Sander
New York	Evaluation of Soil Test Nitrogen Procedures in maize-based Cropping Systems	Cornell University	\$60,000	John M. Duxbury
North Carolina	Developing an Enzymatic Assay for Predicting N Release from Organic Residues	North Carolina State University	\$51,300	Robert Mikkelsen
Ohio	Calibrating the Presidedress N Soil Test for Specific Cropping Conditions	Ohio State University	\$58,964	Donald Eckert
Pennsylvania	Developing Tests to More Accurately Predict Economic Optimum N Rates for Corn	Pennsylvania State University	\$60,000	Richard H. Fox
Pennsylvania	Identification of Barriers to Adoption/Diffusion of Nitrogen Availability Tests	Pennsylvania State University	\$60,000	Timothy J. Rollins
South Dakota	Improvement and Implementation of the Pre-Plant Nitrate-Nitrogen Soil Test	South Dakota State University	\$51,659	Ron H. Gelderman
Texas	Influence of Redox on Mineralization, Retention and Release of Soil Ammonium	Texas A&M University	\$60,000	Richard H. Loeppert
Texas	Plant and Soil N Analysis, Irrigation Technology, Economics and N Use Efficiency	Texas A&M Research and Extension Center	\$59,138	Arthur B. Onken
Vermont	Pre-Sidedress Nitrate Test (PSNT) For Corn Following Sod	University of Vermont	\$59,108	Frederick Magdoff
Wisconsin	Assessment of Soil Nitrogen Tests in Animal-Based Farming Systems: Wisconsin	University of Wisconsin	\$56,786	Larry G. Bundy
Wisconsin	Barriers to the Adoption of Improved Nitrogen Nitrogen Tests and Crediting	University of Wisconsin	\$58,299	Peter J. Nowak



**SPECIAL RESEARCH GRANTS PROGRAM - 1993**  
**Water Quality**

<b>State</b>	<b>Project Title</b>	<b>Research Unit</b>	<b>Amount</b>	<b>Research Leader</b>
Alabama	Evaluation of Nitrogen and Phosphorus Bio-Availability Indices for Poultry Wastes	Auburn University	\$139,995	C. Wood
Arkansas	Empore Disk Extraction Investigations: Field Extraction Equipment, Stabilization of Pesticides After Extraction	University of Arkansas	\$ 90,229	T. Lavy
Colorado	In situ Bioremediation of High Nitrate Well Water by Vegetable Oil Injection	USDA/ARS Northern Plains Area	\$ 31,110	W. Hunter
Colorado	Conjunctive Management of Irrigation Water and Nitrogen Fertilizer for Protection of Groundwater Quality	Colorado State University	\$146,718	G. Cardon
Connecticut	Treatment of Pesticide Wastes in Soil and Water with Fenton-type Oxidants	Connecticut Agricultural Experiment Station	\$135,978	J. Pignatello
Florida	Integration of Spatio-temporal Variability for Field-Scale Predictions of Groundwater Contamination	University of Florida	\$145,350	W. Graham
Georgia	Evaluation of Tools for Assessing the Accuracy of Poultry Manure Applications on Agricultural Lands in the Southeast	University of Georgia	\$ 67,102	D. McCracken
Iowa	Constructed Wetlands to Remove Nitrate-nitrogen From Subsurface Cropland Drainage	Iowa State University	\$150,000	J. Baker
Iowa	Automated System for Measuring Water and Solute Transport Under Transient Flow Conditions	Iowa State University	\$ 71,040	J. Swan

Iowa	Evaluation of the Impact of Current and Emerging Farming Systems on Water Quality	Iowa State University	\$360,000	J. Baker
Iowa	Evaluation of the Impact of Current and Emerging Farming Systems on Water Quality	Iowa State University	\$ 3,200	J. Baker
Iowa	Integrated Dairy Waste Management, Water Quality and Crop Utilization System	Land O Lakes, Inc.	\$150,000	D. Ivers
Idaho	Site-Specific Crop Management for Improved Water and Chemical Use Efficiency	University of Idaho	\$149,319	B. King
Indiana	Technique for Developing Groundwater Vulnerability to Nitrate Maps for Large Areas	Purdue	\$140,452	B. Engel
Indiana	The Role of Cropping Systems in the Movement of Plant Nutrients to Surface Water	Purdue	\$135,658	D. Mengel
Indiana	Microbial Activity and Pesticide Degradation Near Tile Drains	Purdue	\$122,242	R. Turco
Kansas	Use of Nitrogen Mineralization in Spatially Variable Nitrogen Recommendations	Kansas State University	\$ 58,973	J. Havlin
Kansas	Amplification of Cryptosporidium DNA Assessing Agricultural Waste	Kansas State University	\$105,261	D. Mosier
Massachusetts	Nitrate Leaching in Alternate Cover Crop Systems	University of Massachusetts	\$149,682	S. Herbert
Michigan	Root Modification of Preferential Flow and Solute Mobility in Subirrigated Agriculture	Michigan State University	\$138,809	A. Smucker
Minnesota	Subsurface Water Quality Under Potato Production in Glacial Outwash Soil	University of Minnesota	\$149,995	S. Gupta
Minnesota	Tillage and Nutrient Effects on the Water Quality of Tile Drainage	University of Minnesota	\$149,839	D. Huggins

Minnesota	Fate of Herbicides During Composting	University of Minnesota	\$128,380	P. Bloom
Missouri	Alternative Management Systems for Enhancing Water Quality in an Aquifer Underlying Claypan Soils	University of Missouri	\$360,000	A. Prato
Missouri	Sensors and Methods for Variable Rate Nitrogen Recommendations on Claypan Soils	University of Missouri	\$146,793	N. Kitchen
Mississippi	Use of Constructed Wetlands to Improve Water Quality in Finfish Pond Culture	Mississippi State University	\$140,749	M. LaSalle
Montana	Solute Transport Model Validation: Evaluation of Temporal and Scale Effects	Montana State University	\$149,363	W. Inskeep
North Carolina	Computer Aid for Environmentally and Economically Sound Weed Management	North Carolina State University	\$149,004	G. Wilkerson
Nebraska	Sprinkler Irrigation as a Remedial Technique for VOC-Contaminated Groundwater	University of Nebraska	\$147,249	R. Spalding
Nebraska	Factors Influencing Spatial Yield and N Use Efficiency of Furrow-Irrigated Corn	University of Nebraska	\$149,854	R. Ferguson
New Hampshire	Impact of Geological Uncertainty on Management Alternatives to Agricultural Drains	Dartmouth College	\$126,000	K. Belitz
New Mexico	Development and Testing of a 2-D Model of Nutrient and Pesticide Transport	New Mexico Institute of Mining and Technology	\$149,755	R. Bowman
New York	Liposome Immuno-migration Sensor for Field Monitoring of Surface and Groundwater Contamination	Cornell University	\$ 60,000	R. Durst
Ohio	Basic Evaluation and Simulation Tool for Agricultural Water Quality (BESTAQUA)	Ohio State University	\$140,000	F. Hadipriono
Oklahoma	Evaluation of Hydrologic/Water Quality Models	Oklahoma State University	\$150,000	C. Haan



Oregon	Evaluation of Irrigation Strategies for Regional Groundwater Quality Management	Oregon State University	\$148,808	M. English
Oregon	Denitrifying Activity in Deep Soil Profiles	Oregon State University	\$124,649	D. Myrold
Pennsylvania	Nitrate Leaching in Intensively Managed Pastures Grazed by Dairy Cows	Pennsylvania State University	\$133,523	S. Fales
Pennsylvania	Karst Geology Agrochem Transport Model With GIS Organization and Visualization	Pennsylvania State University	\$149,999	D. Kurtz
Rhode Island	Spatial Modeling of N-Leaching and the Economics of Aquifer Protection	University of Rhode Island	\$136,800	J. Gorres
Tennessee	Supercritical Fluid Extraction and Enzyme Immunoassay Analysis of Pesticides	Tennessee Tech University	\$105,000	G. Stearman
Tennessee	Impacts of Dairy Manure on Surface and Subsurface Water Quality	University of Tennessee	\$149,592	M. Mullen
Texas	Integration of Processes and Scales for the MSEA Program	University of Texas	\$133,517	D. Maidment
Texas	Diffusion and Sorption of Herbicides in Soil Structural Units	Texas A&M	\$150,000	K. McInnes
Texas	Reducing Potential Groundwater Quality Degradation With Herbicide Application Maps	Texas A&M	\$149,349	S. Searcy
Texas	Probabilistic Risk Assessment for Managing Dairy Waste	Texas A&M	\$150,000	D. Viator
Utah	Efficiency of Zeolite Use in Reduction of Nitrate Contamination from Animal Manure	Utah State University	\$113,646	J. Boettinger
Wisconsin	Effectiveness of Pesticide Regulation: Risk with Atrazine Rate Limitations	University of Wisconsin	\$ 96,115	P. Nowak
Wisconsin	Using Management Practices on Potatoes to Prevent Pesticide Leaching	University of Wisconsin	\$116,097	J. Wyman

# NATIONAL RESEARCH INITIATIVE COMPETITIVE GRANTS PROGRAM - 1993

## Water Quality

State	Project Title	Research Unit	Amount	Research Leader
Arkansas	Addition of GCMS Equipment for Expanding Research Capabilities	University of Arkansas	\$ 32,283	T. Lavy
Arkansas	Molecular Simulation of Adsorption at the Clay Mineral/Solution Interface	University of Arkansas	\$168,500	D. Miller
California	Sorption and Transformation of As(V)/As(III) in Groundwater, Tulare Basin, CA	University of California, Davis	\$100,000	K. Tanji
California	Recovering History of Groundwater Contamination by Tikhonov Regularization	University of California, Riverside	\$ 58,000	Z. Kabala
Colorado	Molecular Analysis of Dehalogenation of Pentachlorophenol	Xenomatrix, Inc.	\$250,000	C. Orser
Connecticut	Rates of Uptake and Release of Organic Compounds by Soil Particles	Connecticut Agricultural Experiment Station	\$160,000	J. Pignatello
Georgia	Effects of Management and Ecosystem Type on Nutrient Retention in Riparian Zones	USDA/ARS South Atlantic Area	\$298,000	R. Lourance
Idaho	Duration and Intensity of Epiaquic Conditions in a Soil Climosequence	University of Idaho	\$ 49,949	P. McDaniel
Idaho	Arsenate Sorption in Flooded Soils	University of Idaho	\$ 46,991	S. McGeehan
Idaho	Precipitation and Oxidation Reactions of Cr at the Solid Solution Interface	University of Idaho	\$145,000	S. Fendorf

Illinois	Surface Chemistry of Oxidized and Reduced Phyllosilicates	University of Illinois	\$198,000	J. Stucki
Kentucky	Winter Annual Root Development and the Scavenging of Residual Soil Nitrate	University of Kentucky	\$ 49,400	J. Grove
Michigan	Mechanistic and Structural Characterization of a Bacterial Urease	Michigan State University	\$180,000	R. Hausinger
Montana	Improving Multi-Element Analytical Facilities for Research in Water Quality	Montana State University	\$ 50,000	W. Inskeep
North Carolina	Physiological and Ecological Controls of Cyanobacterial Bloom Dynamics in Hypereutrophic Waters: Mechanisms and Management Opt	University of North Carolina at Chapel Hill	\$264,200	H. Paerl
Nebraska	Metal-Specific Antibodies for Environmental Testing	University of Nebraska	\$272,000	D. Wylie
New Hampshire	Carbon Controls on Nitrogen Retention by Temperate Forest Ecosystems	University of New Hampshire	\$292,000	W. McDowell
New Hampshire	Riparian Influences on Water Quality from Natural and Afforested Grasslands	University of New Hampshire	\$ 78,841	W. Bowden
New Jersey	Molecular and Genetic Analysis of Anaerobic Toluene Utilization	Rutgers University	\$ 88,816	P. Coschigano
New Mexico	Denitrification as a Means to Remediate Groundwater Contaminated with Dairy Waste	New Mexico State University	\$ 50,000	Z. Samani
New York	Biodegradation and Mechanisms of Formation of Aged Chemicals in Soils	Cornell University	\$100,000	M. Alexander
New York	Transport Pathways and Fate of <i>Cryptosporidium parvum</i>	Cornell University	\$175,800	M. Walker
Ohio	Earthworm Control of Soil Microbial/Physical Processes Influencing Nitrogen Transport	Ohio State University	\$160,000	R. Chin



Ohio	The Role of Organic Colloids in the Compartmentalization of Pesticides in Wetlands	Ohio State University	\$ 94,000	Y. Chin
Pennsylvania	Hydrologic Flowpaths in the Nearstream Zone: Implications for Modelling Stream Chemistry	Pennsylvania State University	\$225,000	D. DeWalle
Pennsylvania	Catalytic Destruction of Organophosphate Pesticides by Metal-Bearing Resins	Pennsylvania State University	\$ 82,000	M. Natan
South Carolina	HPLC Addition for Multi-User Analytical Laboratory	Clemson University	\$ 26,280	M. Riley
Texas	Chemical and Physical Characteristics of Water Flow Paths in Structured Soil	Texas A&M	\$178,000	K. McInnes
Vermont	Acquisition of an Automated Ion Analyzer	University of Vermont	\$ 20,188	D. Ross
Wisconsin	Lead Retention by Soil Colloids	University of Wisconsin	\$100,000	W. Bleam
West Virginia	Isolation and Characterization of Membrane-Bound Methane Monooxygenase	West Virginia University	\$177,000	A. Shiemke

# SMALL BUSINESS INNOVATION RESEARCH GRANTS - 1993

## Water

State	Project Title	Organization	Amount	Project Leader
California	Water Conservation Using Evapotranspiration Broadcast and Dynamic Control	EMC/Hirsch, Inc.	\$ 49,932	M. Hirsch
Minnesota	Development of Novel Plasma Membrane Intrinsic to Improved Water Sensor	NeoMecs, Inc.	\$ 50,000	H. Nomura
New Mexico	Rapid Field Permeameter of Hydraulic Conductivity of Unsaturated Soil	Daniel B. Stephens and Associates, Inc.	\$177,935	D. Stephens
Ohio	Sensitivity Analysis of Groundwater Flows	OLTech Corporation	\$ 50,000	O. Lafe





NATIONAL AGRICULTURAL LIBRARY



1022404974

*Q*

NATIONAL AGRICULTURAL LIBRARY



1022404974